

HELMINTHOLOGICAL ABSTRACTS

incorporating
BIBLIOGRAPHY OF HELMINTHOLOGY
COMPILED FROM WORLD LITERATURE OF 1954



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HELMINTHOLOGICAL ABSTRACTS

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HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1954

Vol. 23, Part 2

60—Acta Veterinaria. Budapest.

- a. BABOS, A., 1954.—“Zur Kenntnis der Helminthenfauna Ungarns. Nematoden aus Fledermäusen.” 4 (1), 1-16. [Russian summary p. 16.]
- b. LÖRINCZ, F. & NEMESÉRI, L., 1954.—“Die Konservierungsverfahren der Fleischwaren-industrie als Präventionsmethoden gegen Trichinellose.” 4 (1), 73-92. [Russian summary pp. 91-92.]
- c. BORAY, J., 1954.—“Experimentelle Untersuchungen über die Echinococcose unserer Haustiere, mit besonderer Rücksicht auf die Echinococcose des Hundes.” 4 (1), 93-109. [Russian summary p. 109.]

(60a) Babos reports on the nematode parasites of 66 bats captured in caves in the environs of Budapest. The new species described and figured are: (i) *Capillaria neopulchra* n.sp. from *Myotis myotis* and *M. daubentonii*, distinguished from *C. pulchra* by the elliptical shape of the ova and by the presence of a lateral papilla at the posterior end of the male and (ii) *Physaloptera myotis* n.sp. from *Myotis oxygnathus*, distinguished from *P. bedfordi* by the formation of the female organs, from *P. breviovaginata* by the configuration of the inner median tooth, and from both species by the length of vagina and oviduct. *Litomosa filaria* from *Myotis myotis* is also described, and *Anoplostrongylus alatus* and *Heligmosomum* sp. are reported from *Miniopterus schreibersii* and *Barbastella barbastellus* respectively. A.E.F.

(60b) Although human trichinelliasis is rare in Hungary, Lorincz & Nemeséri stress that preventive measures must be taken seriously. They consider that the trichinoscope does not reveal light infections, while routine use of digestion techniques is not practicable. From their own series of experiments with the various methods of conserving pig meat products, the authors reach the following conclusions: (i) meat kept at -30°C . for $5\frac{1}{2}$ hours (or for correspondingly longer periods where such deep freeze is not available) is free from infection; (ii) *Trichinella* larvae are killed in salted meat preparations (such as salami) in which the salt content is 3.5% to 4.0% and which are stored for at least two weeks before sale; (iii) meat which has maintained in its centre a temperature of 60°C . for at least ten minutes is safe. A.E.F.

(60c) Boray reports that eight out of 100 dogs examined post mortem in Budapest in 1953 were positive for *Echinococcus granulosus* infection. He concludes from a series of tests that the flotation technique is the best and most reliable method for diagnosing *Echinococcus* infection in dogs. Arecoline hydrobromide, thymol iodide and the washing out of the intestinal canal with 1% silver nitrate proved unsuitable for the treatment of this infection. On the other hand, atebryn administered in capsules at a dosage of 0.04 gm. per kg. body-weight was completely efficacious in 15 out of 17 dogs given this treatment. A 5% solution of hypochlorite is recommended for the destruction of *Echinococcus* ova on instruments and laboratory containers. A.E.F.

61—Advancement of Science. London.

- a. TAYLOR, E. L., 1954.—“The influence of parasitic disease on our animal production.” 10 (40), 375-379.

(61a) The influence of helminth parasitism on animal production has increased since primeval times and is now markedly detrimental. Although some time may elapse before

practical procedures for the eradication of parasites can be suggested to the farming community, the application of recent advances in scientific knowledge should result eventually in an increase in production of meat and milk.

R.T.L.

62—Agriculture. London.

- a. McLEOD, K., GOLIGHTLY, W. H. & PRICE, C. D., 1954.—“‘Tulip root’ of oats in Durham.” 61 (5), 229–231.

(62a) A survey in 1951 showed that in Durham up to 10% of arable fields are badly infested with *Ditylenchus dipsaci*, resulting in serious losses in the oat crops which are too frequently grown. Spring oats are most usually grown in Durham and joint N.A.A.S. and N.I.A.B. variety trials showed that Milford was resistant in that area. The other resistant varieties, winter ones, S.172, S.81, Grey Winter and Unique are mentioned. It is suggested that weed eradication and more careful crop husbandry might lead to the elimination of the pest.

J.B.G.

63—American Journal of Clinical Pathology.

- a. RATHMELL, T. K., MORA, J. J. & VOLODKEVICH, P., 1954.—“Visceral granulomas caused by migrating larvae of *Ascaris lumbricoides*.” 24 (4), 445–447.
b. McQUOWN, A. L., 1954.—“*Capillaria hepatica*.” 24 (4), 448–452.

(63a) Histological examination of the viscera of a 32-year-old Puerto Rican revealed the presence of multiple visceral granulomata due to migrating *Ascaris* larvae. Larvae were found in the liver, pancreas and lungs, in the wall of the small intestine and in the lumen of the appendix. The terminal broncho-pneumonia was associated with the *Ascaris* larvae. R.T.L.

(63b) A second spurious occurrence of *Capillaria hepatica* in man is reported from the U.S.A. The ova found in the faeces were apparently derived from a meal containing squirrel liver. In an examination of *Sciurus niger* captured in and around Innis, Louisiana, three out of 79 were found to be infected.

R.T.L.

64—American Journal of Diseases of Children.

- a. ROETT, C. J. E., FREEMAN, L. C. & SCOTT, R. B., 1954.—“Incidence of ‘subclinical’ trichinosis in children. Observations based on reaction to intradermal test with *Trichinella* antigen.” 87 (4), 464–467.

(64a) Roett *et al.* report the results of *Trichinella* skin tests done on 358 negro children between the ages of one and 13 years. Six gave a positive reaction; all had eaten pork, most commonly raw sausage meat. Five of the reactors were tested again two weeks later and all were positive. None showed any signs of clinically active trichinelliasis.

S.W.

65—American Journal of Pathology.

- a. LOPES DE FARIA, J., 1954.—“Cor pulmonale in Manson’s schistosomiasis. I. Frequency in necropsy material; pulmonary vascular changes caused by schistosome ova.” 30 (1), 167–197.

(65a) Investigation was made on the incidence of cor pulmonale in 180 cases of schistosomiasis *mansoni* examined post mortem. Microscopic changes caused by schistosome ova in small branches of the pulmonary artery were also observed in those cases presenting schistosomal liver cirrhosis and cor pulmonale. It was found that 5.5% of the cases presented cor pulmonale, 90% of these being female. Grossly the lungs showed passive congestion; the pulmonary arterial tree having a diffuse thickening of the walls of the small branches; in a few cases atherosclerosis and intimal lipoidosis were found in the larger branches. Schistosomal granulomata appeared in the arterial intima and lumen, arterial adventitia, periarterial tissues, alveolar septa and bronchiolar adventitia. In passing through an arterial wall the ovum caused focal or diffuse necrosis. Advanced arterio-venous aneurysms were rare but they were present in all cases in different stages of development. As controls lung

tissue was taken from eight patients with schistosomal hepatic cirrhosis, but without cor pulmonale. In these it was found that the schistosome ova were retained in smaller branches (below 100μ) of the pulmonary artery, than in the group with pulmonary hypertension. It was confirmed that schistosomal cor pulmonale is a complication of schistosomal hepatic cirrhosis.

D.L.H.R.

66—American Journal of Roentgenology and Radium Therapy.

- a. MINTEER, D. W., HAYES, J. D. & YOUNGSTROM, K. A., 1954.—“Intestinal ascariasis in man.” 71 (3), 416-419.

67—American Journal of Surgery.

- a. HAYES, J. H., 1954.—“Massive echinococcal cyst of the liver.” 87 (2), 297-299.

68—American Journal of Tropical Medicine and Hygiene.

- a. KESSEL, J. F., PARRISH, M. & PARRISH, G., 1954.—“Intestinal protozoa, helminths and bacteria in Tahiti, French Oceania.” 3 (3), 440-446.
- b. CARR, H. P., PICHARDO SARDÁ, M. E. & NÚÑEZ, N. A., 1954.—“Anthelmintic treatment of uncinariasis.” 3 (3), 495-503.
- c. BROWN, H. W., CHAN, K. F. & HUSSEY, K. L., 1954.—“The efficacy of piperazine compounds against *Syphacia obvelata*, a pinworm of mice.” 3 (3), 504-510.
- d. DAUGHERTY, J., GARSON, S. & HEYNEMAN, D., 1954.—“The effect of *Schistosoma mansoni* infections on liver function in mice. I. Amino acid oxidase and ammonia.” 3 (3), 511-517.
- e. VAUGHN, C. M., OLIVIER, L., HENDRICKS, J. R. & MACKIE, T. T., 1954.—“Mollusciciding operations in an endemic area of schistosomiasis in the Dominican Republic.” 3 (3), 518-528.
- f. FRIEDHEIM, E. A. H., SILVA, J. R. DA & MARTINS, A. V., 1954.—“Treatment of schistosomiasis mansoni with antimony-a,a'-dimercapto-potassium succinate (TWSb).” 3 (4), 714-727.
- g. DAVIES, A. M. & ELIAKIM, M., 1954.—“The value of different antigens in the diagnosis of chronic bilharziasis by the skin and complement fixation tests.” 3 (4), 728-741.
- h. ROSEN, L., 1954.—“Human filariasis in the Marquesas Islands.” 3 (4), 742-745.
- i. CHAN, K. F. & BROWN, H. W., 1954.—“Treatment of experimental trichinosis in mice with piperazine hydrochloride.” 3 (4), 746-749.
- j. BROWN, H. W. & STERMAN, M. M., 1954.—“Treatment of *Ascaris lumbricoides* infections with piperazine citrate.” 3 (4), 750-754.
- k. HOEKENGA, M. T., 1954.—“Experiments in the therapy of human ascariasis.” 3 (4), 755-761.
- l. PÉREZ-FONTANA, V., 1954.—“Investigations on eggs of helminths, with special reference to the epidemiology of hydatid disease.” 3 (4), 762-763.
- m. SADUN, E. H., VAJRASTHIRA, S. & MAIPHOM, C., 1954.—“The effect of treatment and sanitation on hookworm infection in Choburi Province (Central Thailand).” 3 (4), 764-772.

(68a) The helminth incidence in 560 individuals in Tahiti, French Oceania, as determined by examination of the faeces was *Trichuris* 44%, hookworm 38%, *Ascaris* 12.9%, *Enterobius* 2.7%, *Strongyloides* 1.3%, *Hymenolepis* 0.2% and *Opisthorchis* 0.2%. Only in five individuals were the hookworm egg counts over 2,000 per gm. of faeces and little hookworm disease was seen. The case of *Opisthorchis* infection occurred in a Chinese who probably acquired the infection from eating imported dried fish.

R.T.L.

(68b) Tetrachlorethylene, administered in soft gelatin capsules without being followed by a purge is more efficient in removing hookworms and causes less shock to the patient than when followed by a saline purge. A dosage scale of 0.06 c.c. tetrachlorethylene per lb. body-weight, with a maximum dose of 5.0 c.c., is highly efficacious and causes no more untoward symptoms than a smaller dose of 0.05 c.c. per lb. body-weight, with a maximum dose of 4.0 c.c. The anthelmintic efficiency is not increased by alternating treatments with tetrachlorethylene and hexylresorcinol, or by using tetrachlorethylene in fractionated doses. Emptying the intestine by means of a laxative before anthelmintic treatment did not contribute to its efficiency.

G.I.P.

(68c) Tests with 32 piperazine compounds were made on mice subsequent to infection with *Syphacia obvelata*. Details of their formulae and individual effectiveness are tabulated. The simple piperazine base and its salts appear more effective than the more complex substituted compounds. The mature stages of *Syphacia* are more vulnerable to piperazine than the immature stages. G.I.P.

(68d) From experimental studies on the effect of *Schistosoma mansoni* infections on certain liver functions it was found that the liver was consistently enlarged, as indicated by an increase in the percentage of liver weight to body-weight, and that its fluid content was increased by the oedema accompanying the infection. Both are probably protective mechanisms. The feeding of tryptic casein digest caused a pronounced rise in liver amino nitrogen in the infected mice but not in the controls. The free amino nitrogen in the muscle tissue was not materially affected. But a rise in amino nitrogen in the blood reflected the conditions in the liver. A significant rise in the level of amino nitrogen in the liver after the administration of tryptic casein digest indicated an inability to deal with the sudden influx of amino acids in the casein hydrolysate. R.T.D.

(68e) In an attempt to eradicate *Australorbis glabratus*, the intermediary of *Schistosoma mansoni*, from two infected streams near Hato Mayor in the Dominican Republic, one application of sodium pentachlorophenate, in briquette form, at the rate of 15 p.p.m. caused the disappearance of *A. glabratus* for six months from the flowing stream Paña Paña, and 5 p.p.m. destroyed these snails in a series of connected pools in the sluggish stream Las Guamas. G.I.E.

(68f) TWSb, a new type of trivalent organic antimonial, is a white crystalline powder which is soluble in water to more than 30%, is insoluble in alcohol, acetone and ether, and remains unchanged on boiling. It can be given intramuscularly or intravenously. In laboratory animals it is therapeutically active against *Litomosoides carinii* and *Schistosoma mansoni*. For clinical use in cases of schistosomiasis *mansoni* 5% to 10% solutions were prepared by the addition of sterile distilled water or 5% glucose solution to the anhydrous TWSb contained in rubber-capped vials. For injection into deep gluteal muscle doses not exceeding 5 c.c. were used. For intravenous injection the dose did not exceed 10 c.c. The latter took only one to two minutes as compared with 12 minutes required for tartar emetic injections. In 58 cases given 1 to 3-day intensive intravenous treatments with doses totalling 1.1 gm. to 2.3 gm. there were 53 cures as revealed by rectal biopsy and faecal examination for 12 months afterwards. The five relapses had dosages which could be increased as they were well within the tolerated range. As a TWSb course of treatment can be completed with safety within two days and effects a rapid inhibition of egg deposition with a high rate of cure it appears to be particularly suitable for large scale use by public health departments. R.T.D.

(68g) Davies & Eliakim review the published literature on the skin and complement fixation tests in the diagnosis of schistosomiasis, and describe their experimental work on chronic cases using different antigens. Three antigens were tested, namely, a saline extract of the hepatopancreas of *Australorbis glabratus* infected with *Schistosoma mansoni* (concentration 1:1,000), an aqueous extract of adult *S. mansoni* in Coca's solution (dilutions up to 1:10,000) and aqueous *Fasciola hepatica* extract prepared from dried worms (dilution 1:5,000): their preparation is described. The *S. mansoni* extract proved to be the most effective in both the skin test and the complement fixation test diagnosing 90% (with only 1.2% false positives) and 86.5% respectively. Although the snail extract diagnosed 89% (skin test) and 54% (C.F.T.), there were many painful reactions with erythema, pain and swelling at the site of injection and 27% false positives in the skin test. *F. hepatica* extract diagnosed 66% with 11% false positives in the skin test and was without activity in the C.F.T. Treatment did not affect the skin reactions but altered a number of the titres in the C.F.T. some rising and others falling although most remained the same. S.J.

(68h) Rosen has surveyed the six inhabited islands of the Marquesas Archipelago for filariasis and mosquito species; he has found that *Wuchereria bancrofti* is endemic in all

and that 5% of the total population have gross manifestations of elephantiasis. *Aedes polynesiensis*, a known vector of *W. bancrofti*, was also found on all six islands and microfilariae were present in the blood of persons who had never left the islands. From the early literature it appears that *W. bancrofti* and *A. polynesiensis* have only become endemic since the beginning of European influence.

S.W.

(68i) Chan & Brown have tested piperazine hydrochloride against *Trichinella spiralis* in laboratory mice. In the first experiment the drug was given from the second or sixth day after infection for seven days and in the second experiment from the ninth day for seven days. The dose rate varied from 500 mg. per kg. body-weight to 2,000 mg. per kg.: the highest dose rate produced toxic symptoms although it reduced the number of adults present in the gut by 91%. The drug appeared to have a greater effect on the older infections and it is suggested that 2 gm. to 3 gm. piperazine citrate daily should be tried in human cases of trichinelliasis.

S.W.

(68j) Brown & Sterman have tested Antepar (a piperazine citrate syrup containing 100 mg. equivalent of piperazine-hexahydrate per c.c.) against *Ascaris* in children. Daily dosage was at the rate of 2.5 c.c. for children 15 lb. to 30 lb. in weight, 5.0 c.c. for those 31 lb. to 60 lb. in weight and 10.0 c.c. for those of 61 lb. and over. When given on seven consecutive days it was highly effective; four and five-day courses were almost as efficient but a three-day course was less so, resulting in a 94% reduction in egg count. No fasting or purging was necessary.

S.W.

(68k) Hoekenga summarizes the results of earlier work on the treatment of ascariasis with hetrazan [for abstracts see Helm. Abs., 20, No. 926a & 21, No. 176e] and compares them with other compounds he has tested, namely, sodium santoninate, nematolyt, hexylresorcinol monoacetate, hexylresorcinol and a chenopodium-chloroform mixture. None of these was very effective, the best result in single-dose treatments being 42% cure obtained with hexylresorcinol, while hetrazan with an 80% cure rate appeared to be the most satisfactory when multiple doses were given.

S.W.

(68m) Sadun *et al.* have carried out a controlled experiment on the effect of sanitation and treatment on the incidence of hookworm disease in central Thailand. Two villages with similar percentages and intensities of infection were used. One (population about 4,000) was left untreated and without sanitation as a control. The population of the other (numbering about 2,500) was given some health education, was persuaded to construct and use latrines and was treated with an anthelmintic. After a year it was apparent that sanitation alone reduced the intensity of infection considerably but not the percentage of the population infected: sanitation and treatment reduced both the intensity and the percentage infected. The paper is illustrated by a sketch map and a number of tables and histograms.

S.W.

69—American Journal of Veterinary Research.

- a. TURK, R. D., JONES, J. H. & CROUCH, E. K., 1954.—“Phenothiazine in unweaned calves.” 15 (55), 224–225.
- b. COOPERRIDER, D. E. & HAYES, F. A., 1954.—“Experimental treatment of *Trichuris vulpis* infections.” 15 (55), 272–273.
- c. SELF, J. T. & RUSSELL, H. T., 1954.—“The effect of certain chemicals on the eggs and larvae of the canine hookworm (*Ancylostoma caninum*).” 15 (55), 281–284.
- d. GRIFFITHS, H. J., LEARY, R. M. & FENSTERMACHER, R., 1954.—“A new record for gapeworm (*Cyathostoma bronchialis*) infection of domestic geese in North America.” 15 (55), 298–299.

(69a) The daily average gain in weight of unweaned beef calves (lightly infected with trichostrongyles) over periods of 97–109 days was 1.98 lb. When given phenothiazine at the rate of 1 gm. per lb. live weight it averaged 1.97 lb. In those receiving 12.5 gm. of phenothiazine for 100 lb. live weight at 21-day intervals the average daily gain was 1.98 lb. From this it would appear that the daily gain was not influenced by the phenothiazine.

R.T.L.

(69b) Rectal injections of 500 ml. of a 0.2% suspension of hexylresorcinol proved ineffective against *Trichuris vulpis*, ascarids and hookworm infection in dogs. R.T.L.

(69c) Of the nine chemicals sprayed in quartz sand cultures of *Ancylostoma caninum*, ethylene dibromide, Dowfume N (1,3-dichloropropene) and Dowicide G (75% sodium pentachlorophenate, 13% sodium salts of other chlorophenols) gave effective kills provided the cultures were covered. DN I (40% dinitro-*o*-cyclohexylphenol), benzene hexachloride and crude rotenone were only effective when used in large amounts. Pure rotenone gave poor results. DN III (20% dicyclohexylamine salt of dinitro-*o*-cyclohexylphenol), and Premerge (54% of alkanolamine salts of dinitro-*o*-sec-butylphenol) were ineffective. R.T.L.

(69d) A mortality of about 20% in a flock of goslings in Minnesota was caused by *Cyathostoma bronchialis*. In Minnesota this gapeworm has hitherto been found only in the Canada goose, Blue goose and Bean goose. R.T.L.

70—American Midland Naturalist.

- a. DORAN, D. J., 1954.—“A catalogue of the Protozoa and helminths of North American rodents. I. Protozoa and Acanthocephala.” 52 (1), 118–128.
- b. MONACO, L. H., WOOD, R. A. & MIZELLE, J. D., 1954.—“Studies on monogenetic trematodes. XVI. Rhamnocercinae, a new subfamily of Dactylogyridae.” 52 (1), 129–132.
- c. CHANDLER, A. C., 1954.—“New strigeids from Minnesota birds and mammals.” 52 (1), 133–141.
- d. JASKOSKI, B. J., 1954.—“A comparative study of detergent effects on ascarid development.” 52 (1), 142–148.
- e. DALMAT, H. T., 1954.—“Ecology of simuliid vectors of onchocerciasis in Guatemala.” 52 (1), 175–196.

(70a) Thirteen species of Acanthocephala are entered in this catalogue of parasites of North American rodents. R.T.L.

(70b) *Rhamnocercus rhamnocercus* n.g., n.sp. which is described and figured from the gills of *Umbrina roncadore* collected off the Californian coast is type of a new subfamily of Dactylogyridae named Rhamnocercinae n.subf. and of the new genus *Rhamnocercus*. The closest relatives of Rhamnocercinae are Diplectaninae Sproston, 1946 from which they differ in the absence of squamodiscs or circular plates on the haptor and the presence of rows of spine-like hooks on the peduncle which, like the haptoral spines, arise in the parenchyma. R.T.L.

(70c) Three new strigeids are described from Minnesota. Mature specimens of *Alaria* (*Alaria*) *minnesotae* n.sp. from *Mephitis mephitis* and domestic cats are only 1.45 mm. to 1.9 mm. long. The forebody is broad, the ventral sucker is smaller than the oral sucker and the holdfast often overlaps the ventral sucker. Metacercariae found in oval cysts in the connective tissue fascia of the breast muscles of *Bonasa umbellus* from Itasca State Park are named *Tetracotyle bonasae* n.sp. although they may be the larvae of *Alaria* (*A.*) *minnesotae*. *Diplostomum marshalli* n.sp. from *Totanus flavipes* is the only species of *Diplostomum* in which the forebody is consistently as broad or broader than it is long. *Ophiosoma crassicolle* (?) Dubois, 1948 were collected from the American bittern, *Botaurus lentiginosus*, at Waubesa. R.T.L.

(70d) Experiments with ten different detergents on the eggs of *Ascaris lumbricoides* from the pig, *Toxocara canis*, *T. cati*, *Heterakis gallinae* and *Ascaridia galli* showed that *n*-octyl sodium sulphate and an alkyl aryl sulphonate were the most effective in preventing their development. At 31°C. the effect was less destructive than at 38°C. The practical values of detergents as ovicides and larvicides or as spreading agents for ovicidal chemicals remains to be determined. R.T.L.

(70e) During an investigation of the relationship of Simuliidae to the transmission of *Onchocerca volvulus* in the municipality of San Pedro Yepocapa, a highly endemic region in Guatemala, Dalmat found that of the 39 known simuliid species only 6 commonly attacked man. Of 433 *Simulium ochraceum*, generally considered the principal vector, 0.89% were found to be naturally infected whereas of 631 *S. metallicum* examined 1.86% were positive. Natural and experimental infections were obtained in *S. exiguum*, *S. veracruzianum* and *S. haematopotum* in some of the onchocerciasis areas. Attempts to control the spread of onchocerciasis without an accurate knowledge of the identity, breeding places, life-history and geographical distribution of the actual vectors may result in fruitless expenditure of money and effort.

R.T.L.

71—Annales de la Société Belge de Médecine Tropicale.

- a. BROWNE, S. G., 1954.—“Zona bilatéral provoqué par la *Loa-loa*.” 34 (1), 5-8. [Flemish summary p. 8.]
- b. VERCAMMEN-GRANDJEAN, P. H., 1954.—“Dépistage et contrôle de la bilharziose.” 34 (1), 135-137. [Flemish summary p. 137.]
- c. MONTENY, V. A. R., 1954.—“Les infestations par *Schistosoma mansoni* et leur traitement par les sels antimonisés.” 34 (2), 203-207. [Flemish summary p. 206.]
- d. SCHWETZ, J., 1954.—“Réflexions sur la prophylaxie anti-bilharzienne en Afrique centrale et tout spécialement au Congo belge, avec quelques considérations sur l'étiologie et l'endémiologie.” 34 (2), 233-250. [Flemish summary pp. 248-249.]

(71a) Browne describes a case of infection with *Loa loa* in which symmetrical lesions resembling herpes zoster appeared on the neck. While the lesions were still apparent a single *Loa loa* emerged from the deep tissue near the third cervical vertebra and the author concludes that the lesions were caused by the mechanical pressure of the worm on the nerve ganglia.

S.W.

(71b) Vercammen-Grandjean describes a technique which facilitates observations on ova and miracidia of *Schistosoma mansoni*. Three or four grammes of faeces are mixed with physiological saline to a height of 1-2 cm. in a tube and shaken vigorously with six or eight small glass balls for one minute. After sedimenting for about 8-12 minutes the supernatant is poured off leaving about 3 c.c. This washing is repeated several times and then the sediment is put through a double thickness of gauze into a glass dish 10 cm. in diameter and examined with a stereoscopic lens. Far more infections were detected with this method than by direct smear or AEX concentration.

S.W.

(71c) Monteny has studied, over a period of five years, 191 cases of schistosomiasis *mansoni*. He used tartar emetic, anthiomaline, fouadin, repodral and tristibine in treatment and found that if the amount of antimony given did not exceed 0.6 gm. in 15 days the electrocardiograms, although changed, remained within the limits of normal and became completely normal within a month of the end of treatment. The infection rate in the 3,000 patients examined was only about 11%, considerably lower than had been previously reported in the locality of the gold-mining concession in Kilo-Moto. The author was unable to find striking radiographic signs of pulmonary involvement.

S.W.

(71d) Schwetz quotes from a number of authors on the various aspects of schistosomiasis in man, and discusses the epidemiology and aetiology with special reference to the Belgian Congo. He compares this disease with malaria and sleeping sickness and is of the opinion that, although treatment of carriers with such drugs as miracil-D etc. is easier than snail destruction, control can only be effected by the eradication of the intermediate hosts. Each focus, however, must be treated individually, depending on the locality, geographical features and intensity of infection.

S.W.

72—Annals of Applied Biology.

- a. JONES, F. G. W., 1954.—“First steps in breeding for resistance to potato-root eelworm.” 41 (2), 348-353.

(72a) Jones describes the early stages in breeding potatoes resistant to *Heterodera rostochiensis* by crossing one or other of the resistant species of *Solanum* with the potato. *S. vernei* is troublesome through being genetically diploid, whereas *S. andigenum* is tetraploid like the potato. Resistance appears to be due to a single dominant gene which may be carried on none (multiplex), any, or all four (quadruplex) of the relevant chromosomes. Results of crosses with both quadruplex and triplex *S. andigenum* are given. Resistance is not absolute, the roots being invaded by larvae a proportion of which develop to some extent, but mature adult females were not produced. The *S. andigenum* crosses produce an active root diffusate, fitting them for use as trap-crops, whereas activity from *S. vernei* crosses was low. B.G.P.

73—Annals of Internal Medicine.

- a. ECKER, J. A., LOVSHIN, L. L. & REICH, A., 1954.—“*Acanthocheilonema perstans*—the persistent filaria: with a report of six cases.” 40 (3), 611-615.

(73a) Eosinophilia in six missionaries, seen at the Cleveland Clinic and in excellent health, is attributed to infections with *Acanthocheilonema perstans* acquired in Africa. Hetrazan had little effect on the parasites. R.T.L.

74—Annals of Tropical Medicine and Parasitology.

- a. DASSANAYAKE, W. L. P., 1954.—“A follow-up of 230 cases of bancroftian filariasis treated with hetrazan at the filariasis clinic at Dehiwala, Ceylon.” 48 (2), 123-126.
 b. DASSANAYAKE, W. L. P., 1954.—“The control of mosquito-breeding in husk-pits by naturalistic methods.” 48 (2), 127-128.
 c. DASSANAYAKE, W. L. P. & CHOW, C. Y., 1954.—“The control of *Pistia stratiotes* in Ceylon by means of herbicides.” 48 (2), 129-134.
 d. CROSSKEY, R. W., 1954.—“Infection of *Simulium damnosum* with *Onchocerca volvulus* during the wet season in northern Nigeria.” 48 (2), 152-159.
 e. EDWARDS, E. E. & McCULLOUGH, F. S., 1954.—“Studies on the life-cycles of *Schistosoma haematobium* and *S. mansoni* in the Gold Coast.” 48 (2), 164-177.
 f. NEWSOME, J. & ROBINSON, D. L. H., 1954.—“Investigation of methods of maintaining *Schistosoma mansoni* in vitro.” 48 (2), 194-200.
 g. NICHOLAS, W. L. & KERSHAW, W. E., 1954.—“Studies on the intake of microfilariae by their insect vectors, their survival, and their effect on the survival of their vectors. III. The intake of the microfilariae of *Acanthocheilonema perstans* by *Culicoides austeni* and *C. grahamii*.” 48 (2), 201-206.
 h. SILVERMAN, P. H., 1954.—“Studies on the biology of some tapeworms of the genus *Taenia*. I.—Factors affecting hatching and activation of taeniid ova, and some criteria of their viability.” 48 (2), 207-215.
 i. CREWE, W., 1954.—“Studies on Ethiopian *Chrysops* as possible vectors of loiasis. I. *Chrysops langi* Bequaert.” 48 (2), 216-219.

(74a) Twenty-nine months after 230 cases of bancroftian filariasis had each completed a single course of hetrazan there was a very considerable reduction both in the number of persons having microfilariae in the blood and in the degree of microfilaraemia. The dosage followed was two tablets of 50 mg. each, three times daily for seven days. G.I.P.

(74b) In Ceylon the coconut husk pits are dug in low-lying ground and contain stagnant water in which *Culex fatigans* breeds in large numbers. If the pits were constructed in the margins of rivers or on the beach where they would be filled with running water these vectors of bancroftian filariasis and the noxious smells associated with the retting of the husks would be eliminated. G.I.P.

(74c) Chemical control of *Pistia* with Phenoxyline 30 in the dilution of 1 to 2 fluid oz. with 1 fluid oz. of a wetting agent (e.g. Teepol) in each gallon of water and sprayed at the rate of 36 gallons per acre proved easy, cheap and efficient. The treated plants died within

5 to 10 days. As the cost is about one sixth that of manual removal, chemical spraying is now in general use in Ceylon. G.I.P.

(74d) Of the 1,780 *Simulium damnosum* collected in Kudaru during the wet season 20% were infected with *Onchocerca volvulus*. Of these, 12% contained developing forms only, 6% showed infective larvae only and 2% contained both stages. The developing forms were mainly in the thorax while infective larvae were obtained from most regions of the body. G.I.P.

(74e) On the Gold Coast *Physopsis africana* is the intermediate host of *Schistosoma haematobium*. The incubation period from the miracidial to the cercarial phase is 32 days approximately. In *Mus musculus* and *Papio anubis choras* the adults attained maturity within 70 days after experimental infection. *Biomphalaria pfeifferi* is the intermediary of *S. mansoni* and the cercarial phase is reached in about 27 days. *M. musculus* and *Cercocebus lunulatus* can be infected. In these hosts *S. mansoni* matures in 40 days. G.I.P.

(74f) Newsome & Robinson review existing methods of maintaining schistosomes *in vitro* and describe a new method of maintaining adult *Schistosoma mansoni* in serum by the use of gravity-feed apparatus which is illustrated. In it five adult worms remained active throughout a 28-day period of observation. G.I.P.

(74g) When fed on a person whose blood contained microfilariae of *Acanthocheilonema perstans*, *Culicoides austeni* had a higher infection rate than *C. grahamei*. This difference is considered to be due to a lower subsequent survival of the larvae in *C. grahamei* and not to a difference in number of microfilariae taken in by this fly. G.I.P.

(74h) Between 3,000 and 4,000 cattle are annually reported by British abattoirs to be infected with *Cysticercus bovis*. It is suspected that the eggs may be able to survive sewage processing, pass into the effluent and subsequently pollute streams used for watering cattle or be distributed in sludge for use as fertilizer. An economical method of testing the viability of *Taenia* eggs derived from these sources is therefore necessary. Silverman's review of previous contributions towards a solution of this problem reveals that the conditions required for hatching and activating cestode embryos vary with the families, genera and even species to which they belong. Taeniid eggs require a protease to disintegrate the embryophore and hatch the hexacanth embryo. A combination of lipolytic substances is necessary to increase the permeability of the onchospherical membrane and stimulate the embryo into activity. *T. saginata* eggs need pretreatment with gastric juice before the intestinal juice can disintegrate the embryophore, but *T. pisiformis* eggs are digested and the embryo actuated by intestinal juice alone. R.T.L.

(74i) Six *Chrysops langi* were bred from pupae. Five were allowed to feed on blood containing microfilariae of *Loa loa* and *Acanthocheilonema perstans* and one was fed on blood containing only *A. perstans* microfilariae. Of the batch of five, one dissected seven days later showed immature larvae, the remaining four dissected on the 9th to 12th day harboured infective larvae. The single fly fed on *A. perstans* embryos was dissected on the 7th day but no larva was found. *Chrysops langi* is a rare fly and is unlikely to be of importance as a vector of loiasis in man but it may be a main factor in the transmission of the filaria resembling *Loa loa* which is present in monkeys in the Kumba area of the British Cameroons. Crewe records that *C. silacea*, *C. dimidiata* and three other *Chrysops* species will take a blood meal without having mated previously. G.I.P.

75—Australian Veterinary Journal.

- a. WHITLOCK, H. V., 1954.—"Further observations on oesophageal tubes for drenching sheep." 30 (4), 100-104.
- b. GORDON, H. McL. & FORSYTH, B. A., 1954.—"Sparganosis in feral pigs in New South Wales." 30 (5), 135-138.
- c. OSBORNE, H. G., 1954.—"Liver fluke (*Fasciola hepatica*) infestation in sheep and its seasonal incidence in northern New South Wales." [Correspondence.] 30 (5), 152.

- d. RIEK, R. F., 1954.—"A note on the occurrence of *Onchocerca reticulata* Diesing 1841 in the horse in Queensland." 30 (6), 178-181.
e. GORDON, H. McL., 1954.—"Treatment of trichuriasis in dogs." [Correspondence.] 30 (6), 188.

(75a) The McMaster tube for drenching sheep with phenothiazine suspensions has been modified and adapted for use with automatic drenching guns. Half-inch rubber tubing was fitted with an anti-drip valve and a metal sleeve. An illustrated account is given of the method of oesophageal intubation and of restraining the sheep. No reports of mortality or choking have been received. Any staining of the wool has resulted from careless administration.

G.I.P.

(75b) Gordon & Forsyth have found infection with spargana of *Spirometra erinacei* to be very common in "wild" pigs fattened in captivity in New South Wales. When carcasses were kept at -8°C. for 24 hours the spargana were not infective to dogs and cats. They are not optimistic about controlling this parasite but stress that domestic pigs should not be kept in marshy areas in which water-fleas and frogs are common and to which foxes, dogs and cats infected with *S. erinacei* have access.

S.W.

(75c) Osborne has found that in the New England area the occurrence of acute liver-fluke disease and black disease in sheep did not show the usual December to April seasonal incidence, but that the peak was from June to September. He attributes this to the survival time of cercariae on pastures rather than to the time of hatching of the eggs, heavy infestations resulting when the stock are forced by seasonal conditions to graze on low-lying, damp pastures. In this area the main dry period is from June to September.

S.W.

(75d) An examination of 282 horses with allergic dermatitis from various parts of Queensland showed that 79.8% were infected with *Onchocerca reticulata*. It therefore appears that the vector or vectors of this nematode are of widespread occurrence. Only one case of fistulous withers was observed. On post-mortem, evidence of abscess formation was obtained in less than 5% of the infected animals. These were all over six years old and the majority of them did not harbour adult worms.

G.I.P.

(75e) For the treatment of *Trichuris vulpis* in dogs, 1:8 dihydroxyanthraquinone (Diaquone) may be of value. In preliminary tests on a well grown Cocker spaniel the dose given was 1.5 gm. daily for a week. This compound is commonly used as a purgative for horses and other animals. It is also effective against parasites from the large intestine of sheep, including *Trichuris* spp. which are not affected by the usual anthelmintics.

G.I.P.

76—Belgisch Tijdschrift voor Geneeskunde.

- a. DAMME, J. VAN, 1954.—"Over ascaridiose." 10 (2), 49-58.

77—Berliner und Münchener Tierärztliche Wochenschrift.

- a. BOCH, J., 1954.—"Die Anwendung proteolytischer Fermente bei Nematodenbefall der Pelztiere." 67 (17), 268-270. [English summary p. 270.]

(77a) Forty-four foxes, including 32 cubs, with various heavy naturally acquired nematode infections were used to test the anthelmintic action of the proteolytic enzyme preparation, Vermizym. The established dosage of about 1 gm. per kg. body-weight for small animals proved successful against *Ascaris*, *Trichuris* and *Ancylostoma* but failed in cases of *Strongyloides* infections. Proteolytic enzymes are not detrimental to the mucous membrane or to the intestinal flora. At brief intervals they may be used in weak, sick and pregnant animals.

G.I.P.

78—Biological Bulletin.

- a. CABLE, R. M., 1954.—“A new marine cercaria from the Woods Hole region and its bearing on the interpretation of larval types in the Fellodistomatidae (Trematoda: Digena).” 106 (1), 15–20.
- b. SCHILLER, E. L., 1954.—“Studies on the helminth fauna of Alaska. XVII. Notes on the intermediate stages of some helminth parasites on the sea otter.” 106 (1), 107–121.

(78a) *Cercaria laevicardii* n.sp., a non-ocellate trichocercous distome cercaria, develops in simple sporocysts in the visceral mass of the marine lamellibranch *Laevicardium mortoni* in Lagoon Pond, Martha's Vineyard, Mass. Various caudal modifications in fellodistomatid cercariae and their possible phylogenetic significance are discussed. R.T.L.

(78b) The developmental stages of *Porrocaecum decipiens* in the fishes *Lebius superciliosus* and *Hemilepidotus hemilepidotus* obtained from Constantine Harbour, Alaska, are described. The sea otter is its definitive host at Amchitka. Immature forms were found in the stomach of the bald eagle and of Baird's cormorant but were not considered to be true parasites of these birds. The metacercariae of *Macrophallus pirum*, of which the sea otter is the definitive host, were found in 90% of the 51 hermit crabs, *Pagurus hirsutiusculus*, examined. R.T.L.

79—Boletín Chileno de Parasitología. [Cont. of Boletín de Informaciones Parasitarias Chilenas.]

- a. SILVA, R., DONOSO, F. & NEGhme, A., 1954.—“Consideraciones epidemiológicas sobre *Ascaris lumbricoides* en Chile. I. Estudio en la región lacustre de Chile.” 9 (1), 6–10. [English summary p. 6.]
- b. FAIGUENBAUM, J. & MENESES, C., 1954.—“Sintomatología de la oxiuriasis.” 9 (1), 10–14. [English summary p. 10.]
- c. DONCKASTER, R., GODOY, M. & MORALES, I., 1954.—“Tratamiento de la teniasis con ‘Acranil’ y ‘Priodax’ por intubación duodenal.” 9 (1), 16–19. [English summary p. 16.]
- d. FANTA, E., 1954.—“Abscesos hepáticos múltiples como problema de abdomen agudo y ascariasis concomitante.” 9 (1), 28–29. [English summary p. 28.]
- e. NEGhme, A., SILVA, R. & DONOSO, F., 1954.—“Consideraciones epidemiológicas sobre *Ascaris lumbricoides* en Chile. II. La ascariasis en la zona norte del país.” 9 (2), 47–50. [English summary p. 47.]
- f. PIZZI, T., 1954.—“Inflamación en las enfermedades parasitarias.” 9 (2), 54–59. [English summary p. 54.]
- g. JARPA, A. & HERMOSILLA, F., 1954.—“Un caso de distomatosis hepática.” 9 (2), 64–65. [English summary p. 64.]

(79a) In the lake zone of the Chilean provinces of Valdivia, Osorno and Llanquihue, 2,118 individuals of both sexes and of low social status were examined for *Ascaris lumbricoides* infection. The very high incidence of 56.65% was conditioned by contamination of the drinking water, by the high grade of soil pollution by human faeces, by the high humidity and low temperature which favoured the development of the ova and by the defective sanitary habits of the population. G.I.P.

(79c) Treatment of *Taenia saginata* infection by duodenal intubation with Acranil resulted in the cure of 39 out of 42 patients. When Priodax was given, only two out of 13 patients were cured. G.I.P.

(79d) When treated with santonin, a four-year-old girl infected with *Ascaris lumbricoides* suddenly developed an intestinal obstruction. An operation disclosed several small liver abscesses. It is thought that there may have been a partial migration of *Ascaris* into the biliary tract. G.I.P.

(79e) Although the population of the north of Chile has deficient sanitary habits and the environmental sanitation is poor, the incidence of *Ascaris lumbricoides* in the territory between the provinces of Tarapacá and Coquimbo is only 1% to 7%. This is probably due to the low degree of humidity and to the dryness of the soil which are unfavourable for egg development. The exceptionally high incidence of 23.35% found in La Serena may be explained by different climatic conditions and a high percentage of foreign population. G.I.P.

(79f) Parasites localized in tissues, e.g. larval stages, often cause considerable destruction without inflammation. When an inflammatory reaction does occur, the exudative phase is inconspicuous and organization soon starts by the infiltration of lymphoid and monocytoïd cells and macrophages. Immune animals show an increased intensity of phagocytosis. Granulomata are often formed in helminth infections and anaphylactic hypersensitivity is common. This is often accompanied by eosinophilia and seems to be associated with precipitin production. G.I.P.

80—British Journal of Surgery.

- a. HUESTON, J. T., 1954.—“The production of liver lobe atrophy by hydatid cysts.” 41 (168), 427-430.

81—British Medical Journal.

- a. WHITE, R. H. R., 1954.—“Treatment of threadworm infestation.” [Correspondence]. Year 1954, 1 (4874), 1322-1323.
 b. RITCHKEN, J. & GELFAND, M., 1954.—“Katayama disease, early toxæmic stage of bilharziasis. With a report on a case showing pulmonary infiltration.” Year 1954, 1 (4876), 1419-1420.
 c. DE GLANVILLE, H., 1954.—“*Onchocerca volvulus* in a paratyphoid abscess.” Year 1954, 2 (4881), 214.
 d. O'BRIEN, D. P., 1954.—“Piperazine adipate in the treatment of roundworms.” [Correspondence.] Year 1954, 2 (4881), 246.
 e. CHAUDHURI, R. N., 1954.—“Tropical medicine—past, present, and future.” Year 1954, 2 (4885), 423-430.
 f. KERSHAW, W. E., DUKE, B. O. L. & BUDDEN, F. H., 1954.—“Distribution of microfilariae of *O. volvulus* in the skin. Its relation to the skin changes and to eye lesions and blindness.” Year 1954, 2 (4890), 724-729.
 g. RHODES, P. L., 1954.—“Unusual case of hydatid cyst of the brain.” Year 1954, 2 (4890), 739.

(81a) As perfectly healthy children are often infected with threadworms it is difficult to accept Paterson's view that debilitated children fail to digest and kill off the ova owing to low gastric hydrochloric acid output. As the incidence is high in inmates of mental institutions and in patients incapable of attending to personal hygiene the main factor involved is probably that of hygiene. R.T.L.

(81b) The early signs and symptoms of toxæmia which develop after the first month of infection with *Schistosoma mansoni*, and occasionally with *S. haematobium*, resemble those seen in *S. japonicum* infections and known as Katayama disease. A boy aged seven-and-a-half years paddled on a single occasion in a Rhodesian river known to be infested with molluscs infected with schistosomes. Apart from recurrent vomiting attacks he remained in good health for about a month. His temperature then rose to 100°F. and in the five following days ranged from 100°F. to 104°F. and the blood showed a marked increase of eosinophils. A persistent dry cough developed and he became slightly cyanosed and breathless. X-ray examination showed a diffuse miliary lesion mainly in the lower and middle zones of both lungs. A cercarial skin test was negative. The temperature gradually returned to normal ten days after the onset of the symptoms. The cough and vomiting rapidly improved and apart from some loss of weight and pallor of complexion, he appeared perfectly normal. It is considered unlikely that the transient pulmonary infiltrations and other symptoms were due to cercarial trapped in the lung capillaries or to the migrating schistosomes. The general symptomatology, urticaria, eosinophilia and transient pulmonary infiltration of the early toxæmic stage of schistosomiasis suggest an allergic reaction to the developing worms. R.T.L.

(81d) Piperazine adipate has given O'Brien very satisfactory results, without side effects in the treatment of threadworm infection. As in two of his cases it was strikingly effective against *Ascaris* which was also present, he feels that this drug deserves further trial as treatment for roundworms. R.T.L.

(81f) The distribution of microfilariae of *Onchocerca volvulus* in snips of human skin from different parts of the body of over 200 West Africans gave a clear pattern related to the distribution and severity of the skin lesions and to eye changes and blindness. It may be practicable to ward off these eye changes by reducing the microfilarial intensity and by killing the adult worms by repeated drug treatment.

R.T.L.

82—Bulletin of Endemic Diseases. Baghdad.

- a. ZAKARIA, H., 1954.—“Notes on human schistosomiasis in Iraq, with particular regard to the bionomics of the intermediate host, *Bulinus truncatus* Baylis.” 1 (1), 46–52.

(82a) An investigation was made on the oecology of *Bulinus* sp. in a locality in Baghdad Liwa heavily infected with bilharziasis, and where sulphation of a canal did not prove successful in eradicating the snails. Snails were collected on four occasions from three regions of the canal, one where the canal was shaded by willows, one near a tea-house and one near an abandoned village. Distribution of *Bulinus* sp. in the canal was related to a lesser extent to human and animal pollution than had been anticipated, higher numbers of snails being recorded from the areas shaded by willows or where algal growth was abundant. The food source of the snails, as deduced from examination of gut contents, appeared to be of plant, bacterial and decomposing organic materials. These findings differ from the conclusion of Mozley in 1951 who considered decomposing human and animal organic material to be the chief source of food of *Physopsis globosa* in Rhodesia [for abstract see Helm. Abs., 20, No. 158]. It is of interest that although MacHattie in 1936 failed to encounter *Planorbis* sp. in Baghdad Liwa, Zakaria found them in this area during the present investigation, and at the terminus of the Mahmoodiyah canal, some 40 km. south of Baghdad.

D.L.H.R.

83—Bulletin of Entomological Research.

- a. GARNHAM, P. C. C. & McMAHON, J. P., 1954.—“Final results of an experiment on the control of onchocerciasis by eradication of the vector.” 45 (1), 175–176.

(83a) *Simulium neavei*, vector of *Onchocerca volvulus* in Kenya, was eradicated from Kodera District in 1946 by the application of D.D.T. emulsions to streams where the fly breeds. Skin biopsies in 1947 revealed microfilarial rates of 37% in children of 4–8 years old and 7% in the 3–4 year age group. Skin biopsies were again carried out in 1950 and 1953 to see how the fly eradication had affected the population infection and it was found that in the 4–8 years group the rate had fallen to 5.8% in 1950 and 5% in 1953 and in the 0–3 year group no positives were found. A second survey in 1953 of the 0–7 age group, in which ages were checked by dentition, showed no positives. The persistence of microfilariae in the skin of older persons indicates that the adult worm can live for at least seven years. The stoppage of transmission resulting from the eradication of the fly also had an effect on the clinical aspects of the infection, for after 4 years there was marked reduction in the percentage of people showing skin lesions, eye changes and nodules. There was also evidence that after seven years about a third of the infections had died out in adults.

J.J.C.B.

84—Bulletin Horticole. Liège.

- a. HABRAN, R. & LACROIX, E., 1954.—“Essais de lutte contre l'anguillule du chrysanthème.” 72e Année, 9 (3), 81–85.

(84a) The authors give the results of four years' experiments on controlling chrysanthemum eelworm (*Aphelenchoides ritzema-bosi*). In 1949 and 1950 they used sodium selenate on plants grown in pots and in the open. Results were unsatisfactory with plants in open soil but in pots a dose of 200 c.c. to 250 c.c. of 0.01% sodium selenate per plant during June, July and August gave good control. There is great danger of damage to the plants and care should be taken in applying this chemical. A preliminary test of E. 605 forte at 0.025% as a spray for plants after the appearance of symptoms gave only temporary arrest of the disease. Further tests with E. 605 were made in 1951 and 1952. Infested plants dipped for 30 minutes

in 0.1% Fosfern E. 605 or in 0.1% E. 605 forte on 31st July and again on 30th August showed no disease in October: other plants dipped only on the first occasion were 90% clean. Unrooted cuttings steeped before planting in 0.1% E. 605 for 15 and for 30 minutes suffered no damage and this treatment is recommended for obtaining clean cuttings from infested stools. During subsequent growth, and particularly after 15th July, it is recommended that plants be sprayed every fortnight with E. 605 or parathion at three times the strength recommended by the manufacturers for the control of insects. M.T.F.

85—Bulletin of the Maryland Agricultural Experiment Station.

- a. SASSER, J. N., 1954.—“Identification and host-parasite relationships of certain root-knot nematodes (*Meloidogyne* spp.).” No. A-77 (Technical), 31 pp.

(85a) Sasser tested 60 plant species and varieties with *Meloidogyne incognita*, *M. incognita* var. *acrita*, *M. hapla*, *M. javanica* and *M. arenaria*, and classified them according to degrees of susceptibility as shown by abundance of egg-laying females found on the roots after 7–8 weeks. He found that, of the plants tested, 15 were highly resistant to *M. incognita*, 14 to *M. incognita* var. *acrita*, 30 to *M. hapla*, 18 to *M. javanica* and 16 to *M. arenaria*. Peanuts were attacked only by *M. hapla* and *M. arenaria*; strawberry only by *M. hapla*, cotton (*Gossypium hirsutum*) only by *M. incognita* var. *acrita*. All root-knot nematodes except *M. javanica* attacked red pepper (*Capsicum frutescens*), all but *M. incognita* attacked *Lycopersicon peruvianum* and all but *M. hapla* attacked watermelon, wheat, barley and *Zea mays*. He then compared, by means of experimental inoculations, the numbers of larvae and their development after 20 days in a few resistant and susceptible species, using the same four species and one variety of *Meloidogyne*. The results of these two lines of investigation enable Sasser to draw up a scheme by means of which an unidentified species of *Meloidogyne* may be recognized by its effect on certain critical plant species. It is then possible to forecast which crops will be attacked, which resistant, and which will act as trap crops. In a survey of Maryland, Sasser found *M. incognita* var. *acrita* and *M. hapla* to be widespread and *M. incognita* to be present in a few localities. M.T.F.

86—Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.

- a. D'ESHOUGUES, J. R. & HOUEL, J., 1954.—“Syndrome de Pancoast-Tobias d'origine échinococcique.” 4e Série, 70 (3/4), 59–62.

87—Bulletin du Muséum National d'Histoire Naturelle. Paris.

- a. URBAIN, A. & NOUVEL, J., 1954.—“Infestations parasitaires mortelles observées sur des manchots récemment importés des Îles Kerguelen.” 2e Série, 26 (2), 188–189.

(87a) Urbain & Nouvel record the occurrence of *Parorchites zederi* in the intestines of six *Pygoscelis papua* which died in the Zoological Gardens as a result of extensive *Aspergillus* infections. S.W.

88—Bulletin de la Société de Pathologie Exotique.

- a. DESCHIENS, R., 1954.—“Influence de la concentration en gaz carbonique des eaux naturelles sur les mollusques vecteurs des bilharzioses.” 47 (2), 264–270.
 b. SCHWETZ, J., 1954.—“Sur la classification et la nomenclature des planorbes africains. (A propos de l'article de G. Ranson: 'Observations sur les Planorbidae africains'.)” 47 (2), 270–276. [Reply by G. Ranson pp. 276–278.]
 c. DESCHIENS, R. & PFISTER, R., 1954.—“Sur une microfilaire observée dans le sang de l'homme en Haute Volta.” 47 (2), 278–281.
 d. CHABAUD, A. G., MOFIDI, C. & CHOQUET, M. T., 1954.—“Filaire inconnue, de très petite taille, parasite d'une souris de Téhéran.” 47 (2), 282–284.
 e. TOUZE, M., 1954.—“Présence d'amas microfilariens encapsulés dans le liquide d'hydrocèle à *Wuchereria bancrofti*. Six cas observés aux Îles Wallis.” 47 (2), 284–286.
 f. BLUM-GAYET, J., 1954.—“Essai sur les nématodes antillais de deux anthelminthiques encore peu utilisés dans les pays de langue française.” 47 (2), 286–288.

- g. SCHWETZ, J., 1954.—“Observations sur le comportement comparatif du complexe planorbes *S. mansoni* et celui de *Physopsis S. haematobium* dans les foyers séparés ou mixtes de *S. mansoni* et *S. haematobium*.” 47 (2), 332-338.
- h. MILLE, R., 1954.—“Nouvelles recherches sur l'incidence des filarioses humaines au Nord-Vietnam.” 47 (2), 339-356.
- i. DESCHIENS, R., 1954.—“Mécanisme de l'action létale de *Cypridopsis harteigii* sur les mollusques vecteurs des bilharzioses.” 47 (3), 399-401.
- j. PFISTER, R., 1954.—“Résultats d'une enquête sur les porteurs de microfilarie en Afrique Occidentale Française.” 47 (3), 408-411.
- k. MAUZÉ, J., 1954.—“Un cas d'ankylostomiase du nourrisson.” 47 (3), 411-412.
- l. DESCHIENS, R., 1954.—“Discussion sur un cas d'infestation pulmonaire à nématodes chez un singe cynocéphale.” 47 (3), 412-414.
- m. FLOCH, H. & FAURAN, P., 1954.—“Essais infructueux d'infection expérimentale de *Tropicorbis kuhni* par *Schistosoma mansoni*.” 47 (3), 452-459.

(88a) Deschiens has compared the effect of various natural waters, containing carbon dioxide in different concentrations, on *Bulinus contortus* and *Physopsis glabratus* and on the fish, *Carassius auratus*. He found that both snails were more resistant to carbon dioxide than the fish which was killed in 30 minutes at a concentration of 1.119 gm. per litre, this concentration having no effect on either species of snail. At a concentration of 1.5 gm. per litre the snails were killed in 6-24 hours; in a saturated solution of carbon dioxide the fish died instantly and the snails in less than 24 hours. S.W.

(88b) Schwetz, criticizing the paper on the classification of African planorbid published by Ranson [for abstract see Helm. Abs., 22, No. 328m], is of the opinion that the need is for a classification which will enable workers to determine whether or no a snail is a schistosome intermediary, not for a zoological classification. He states that, in spite of his contention that the internal anatomy is of major importance in the determination of species, Ranson has in fact based his scheme very largely on the morphology of the shell and has made a number of erroneous identifications. He quotes several paragraphs from Ranson's paper. In his reply Ranson points out that his work is only at its beginning and that the two new species were tentatively proposed and descriptions were to be published at a later date. He would like to know what is meant by “une classification médicale pour distinguer les coquilles transmetteuses ou non transmetteuses”. S.W.

(88c) Deschiens & Pfister describe *Microfilaria soudanica* n.sp. from the blood of two Africans from the Upper Volta. The microfilariae are sheathed and measure 250μ by 20μ and could not be identified with any so far described from man. It appears to resemble *Mf. sanguinis bovis* from cattle in the Sudan and Somaliland. The paper is illustrated by two photomicrographs. S.W.

(88d) Chabaud *et al.* describe a new filariid worm from a house mouse (*Mus musculus bactrianus*) caught in Teheran. Only a single specimen, a male, was found in the subcutaneous tissue: it is characterized by its extremely small size, being less than a millimetre in length; the spicules are reminiscent of *Filaroides* or *Arafilarioides* but the oesophagus is divided into two parts. It is suggested that it may prove to be easily maintained in the laboratory and to be of value in work on filariasis. S.W.

(88e) Touzé describes the lymphatic lesions caused by *Wuchereria bancrofti* which he has observed in the Wallis Islands where 40% of the population is infected. Of particular interest are six cases of hydrocele in which foreign bodies floating freely in the cavity were formed from encapsulated agglomerations of microfilariae. S.W.

(88f) Intestinal helminths are common in man in Martinique. Blum-Gayet has tested diphenylpiperazine against *Ascaris* and hexylresorcinol against *Necator americanus*. Of the 20 cases treated for ascariasis, 16 were cured by one treatment and two more by a second; two remained positive. Of the 20 hookworm cases, 13 were cured by one treatment, five more by a second and another by a third; the remaining case was still positive after two treatments and could not be followed up. He is of the opinion that in view of their efficacy, low toxicity and ease of absorption these two drugs are the remedies of choice. S.W.

(88g) Schwetz confirms that not only do very few *Physopsis* become infected with *Schistosoma haematobium*, even in endemic areas, but also that infected snails shed very small numbers of cercariae. Although he was able to infect mice with cercariae from *Physopsis*, these were very light infections, and when only two snails had been used, were unisexual. A much larger proportion of planorbids (from 2% to 50%) was found infected with *S. mansoni* and mice were easily infected. *S. bovis* cercariae were more frequent than those of *S. haematobium* in *Physopsis* at Loro in Uganda. The work is continuing. S.W.

(88h) Mille has studied the incidence of filariasis in man in North Vietnam. A total of 5,283 persons were examined of which 4,097 were from the provinces of the Red River delta. Of the total, 139 were infected with *Wuchereria bancrofti* and 374 with *W. malayi*. The incidence in each province, degree of infestation and clinical symptoms are tabulated. The distribution of *W. bancrofti* is predominantly urban and does not appear to have changed since 1937; there does not appear to be a great danger of its spreading or increasing in intensity or incidence. *W. malayi* is hyperendemic in many of the rural districts of the Red River delta and the endemic foci form a permanent reservoir from which the infection may spread. There is a table for the differentiation of the two microfilariae and a description of the differences in the pathology of the two infections. S.W.

(88i) Deschiens has continued his observations on the predation of *Cypridopsis hartwigii* on schistosome intermediaries, of which an earlier account appeared in *Bull. Soc. Path. exot.*, 46, 956-958. He describes the mode of attack and the reactions of the snail and concludes that, although under natural conditions there would be alternative prey for the ostracod, this is potentially a valuable means of controlling populations of schistosome vectors. *C. hartwigii* is very resistant and will survive transport for long distances. S.W.

(88j) Pfister reports on an investigation into the incidence of microfilariae in man in French West Africa. Fluid from the skin of the upper part of the back and blood smears from 10,169 apparently healthy males were examined. *Acanthocheilonema perstans* was present in 31%, *Onchocerca volvulus* in 5.7%, *Wuchereria bancrofti* in 3.8% and *Dipetalonema streptocerca* in 0.1%; *Loa loa* was not found. Double infections were common. S.W.

(88k) Mauzé reports, from Guadeloupe, a case of heavy infestation with *Necator americanus* in an infant of five months; the child was suffering from severe anaemia. The infection was probably acquired by the child when lying on the ground in and around the hut in which the family lived. S.W.

(88l) Deschiens records the finding, during post mortem examination of a *Papio sphinx* which had died with symptoms of feverish pneumopathy and dyspnoea, of a number of nematodes in the lung tissue. He discusses their possible identity and the part they played in the development of the lung lesions. S.W.

(88m) That there are no autochthonous cases of schistosomiasis *mansoni* in French Guiana is confirmed by the work of Floch & Fauran: *Tropicorbis kühni* was the only planorbid collected around Cayenne and these snails were refractory to infection with miracidia of *Schistosoma mansoni*. S.W.

89—Bulletin de la Société Zoologique de France.

- a. ARVY, L., 1954.—" Sur la présence de *Cercaria setifera* (Monticelli), chez *Phyllirhoe bucephala* (Per. et Les.), à Villefranche-sur-Mer." 78 (5/6), 335.

90—Bulletin of the World Health Organization.

- a. GILLET, J. & WOLFS, J., 1954.—" Les bilharzioses humaines au Congo belge et au Ruanda-Urundi." 10 (3), 315-419. [English summary p. 416.]

(90a) Gillet & Wolfs give a comprehensive account of the schistosome infections of man in the Belgian Congo and Ruanda-Urundi. They base their classification of the intermediaries

on that proposed by Schwetz & Bequaert and give two lists of their distribution; the first is based on the literature and the second on their own collections. A brief historical account is given of *Schistosoma mansoni*, *S. rodhaini*, *S. haematobium* and *S. intercalatum* and the pathology and symptoms of infection with each are described. Their intermediaries are listed and the distribution of each species of schistosome is described and illustrated on a number of maps. There are accounts of the incidence in many of the main foci of infection. Diagnosis, by faecal or urine examination or serologically, is discussed and treatments with various antimony compounds, thioxanthone derivatives, acriflavine, copper salts, antrypol, diamidines and glucantime are reviewed. They are of the opinion that although health education may, in time, have some effect immediate practical control measures are needed. They suggest prophylactic treatment with tartar emetic, provision of safer water supplies and the destruction of the vectors by a number of physical, chemical and biological methods. There is a bibliography of 134 titles.

S.W.

91—California Agriculture.

- a. RASKI, D. J. & SCIARONI, R. H., 1954.—“Brassica-root nematode here. Pest formerly unknown in the United States found to be established in fields in Half Moon Bay area.” 8 (1), 13.
- b. LONGHURST, W. M., DOUGLAS, J. R. & BAKER, N. F., 1954.—“Parasites of sheep and deer. Mutual parasites of domestic sheep and Columbian black-tailed deer studied for transference factors.” 8 (7), 5-6.
- c. HARRINGTON, J. F. & PRATT, H. K., 1954.—“Root fumigation. Carrots and beet roots used in tests for nematode control.” 8 (7), 6.

(91a) Raski & Sciaroni record the occurrence of *Heterodera cruciferae* near Half Moon Bay in San Mateo County. In many fields where the production of cabbage crops has been carried on for at least 30-40 years there were heavy populations of the parasite. It is pointed out that its presence in fields known to be infected with *Heterodera schachtii* will complicate the identification of the latter species under field conditions.

R.T.L.

(91b) In an examination of 98 sheep and 129 deer, one fluke, five tapeworms and 22 roundworms were found common to both groups of animals in California. These fed almost exclusively on grass and herbs between November and mid-April. During this period the deer particularly deteriorated in condition and the mortality amounted in 1951-52 to nearly 40% of the herd. The better condition of the sheep is attributed to the greater length of their intestines. Experimental tests, confirmed by field and laboratory data, indicated that nematodes were transmissible between sheep and deer and ruled out the possibility of host-specific, biological strains.

R.T.L.

(91c) After carrots and beet-roots were treated with vapour heat, ethylene dibromide, methyl bromide and ethylene chlorobromide, they were planted in either a Yolo heavy clay loam or a Yolo fine sandy loam. The effect of the treatments on the survival of the roots is tabulated but the maximum safe fumigation treatment which would control nematode infections in the roots was not determined and, so far, no treatment which would not seriously injure or kill the roots can be recommended.

R.T.L.

92—California Citrograph.

- a. DEWOLFE, T. A., KLOTZ, L. J., BAINES, R. C. & MOORE, P. W., 1954.—“Nematode-capturing fungi.” 39 (3), 104.

(92a) In connection with a citrus rejuvenation project an investigation into the flora in a shavings mulch of a citrus grove under sprinkler irrigation, two species of *Arthrobotrys* were observed to capture and kill nematodes including *Tylenchulus semi-penetrans*.

R.T.L.

93—Canadian Journal of Agricultural Science.

- a. BOSHER, J. E., 1954.—"Root-lesion nematodes associated with root decline of small fruits and other crops in British Columbia." 34 (4), 429-431.

(93a) Species of five nematode genera were found in association with root decay of raspberries, loganberries and strawberries in the fruit growing areas of southern British Columbia. They are an important factor in declining yields. This is the first record of *Pratylenchus penetrans*, *Xiphinema americanum*, *Criconemoides* sp. and *C. curvatum*, and *Criconema* sp. in Canada. *P. penetrans* and *P. pratensis* were shown experimentally to enter the roots of seedlings used as rotation and green manure crops by fruit and bulb growers.

G.I.P.

94—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. TAILYOUR, J. M. & HAMPTON, M. J., 1954.—"A check on the incidence of trichinosis in swine on six piggeries in British Columbia." 18 (8), 311-312.

(94a) In British Columbia a 10.1% *Trichinella spiralis* infection of pigs was reported in 1949. This infection was limited to those piggeries which had adopted garbage feeding, and where there were high rat populations in which *T. spiralis* infection was demonstrated. The piggeries were subsequently moved to new localities on the lower mainland and rigid rodent control was practised. Between 1952 and 1953, 270 hog diaphragms from six of these piggeries were examined but no *Trichinella* larvae were found.

G.I.P.

95—Canadian Journal of Zoology.

- a. SCHAD, G. A., 1954.—"Helminth parasites of mice in northeastern Quebec and the coast of Labrador." 32 (3), 215-224.

(95a) In two areas, one around Menihek and Knob Lake, Labrador, and the other extending from the north shore of the St. Lawrence River to Ungava Bay, 19 species of helminths were recovered from 238 small rodents of the families Cricetidae and Zapodidae. Although life-history studies have not been carried out it is suggested that *Quinqueserialis hassalli* may be synonymous with *Q. quinqueserialis*, a parasite of muskrats, and that its occurrence in mice on the few occasions on which it has been recorded there and elsewhere is incidental. *Andrya bairdi* n.sp. from *Microtus chrotorrhinus* differs from *A. primordial* in the absence of a prostate gland and from all other species of the genus by having unilaterally arranged genital pores. Some doubt as to the validity of *A. primordial* is expressed. In Schad's opinion there is insufficient evidence to distinguish *Catenotaenia linsdalei* from *C. dendritica* in view of the differences observed in contracted and relaxed specimens and he therefore proposes that *C. linsdalei* be regarded as a synonym. An unidentified larval cestode from *Clethrionomys gapperi* is described and figured. The almost complete absence of *Syphacia* spp. is unexpected.

P.M.I.

96—Chinese Medical Journal.

- a. CHUNG, H. L., CH'EN, C. H. & HOU, T. C., 1954.—"Preliminary observations on efficacy of chloroquine in treatment of paragonimiasis. A report of three cases." 72 (1), 1-14.

(96a) The use of chloroquine against paragonimiasis is reported for the first time in three cases from Peking. All three had been previously treated unsuccessfully with emetin and (in two) with tartar emetic. The chloroquine treatment resulted in (i) the subsidence of clinical symptoms, (ii) the improvement of chest X-ray findings and (iii) a decrease in the number of *Paragonimus* ova discharged daily. These discharged ova showed disintegration. Chloroquine has a very low toxicity and is accumulated in large concentrations in the lungs.

G.I.

97—Chronicle of the World Health Organization.

- a. ANON., 1954.—" Bilharziasis in the Belgian Congo." 8 (7/8), 249-251.

(97a) [This is a summary of a paper by Gillet & Wolfs published in *Bull. World Hlth Org.*, 1954, 10, 315-419. For abstract see No. 90a above.]

98—Citrus Leaves.

- a. DEWOLFE, T. A., KLOTZ, L. J., BAINES, R. C. & MOORE, P. W., 1954.—" Citrus nematode activity reduced by fungus plants." 34 (2), 11.

(98a) [This paper is practically the same as that by the same authors in *Calif. Citrogr.*, 1954, 39, 104. For abstract see No. 92a above.]

99—Comptes Rendus des Séances de l'Académie d'Agriculture de France.

- a. FRÉZAL, P., 1954.—" Importance et répercussions de la contamination de l'Algérie par le nématode doré (*Heterodera rostochiensis* Wooll. [Woll.])." 40 (2), 71-74.
- b. CAIRASCHI, E. A., 1954.—" Observations sur une maladie vermiculaire du tabac en Alsace." 40 (2), 75-77.

(99a) The discovery of *Heterodera rostochiensis* on potato plants at Maison-Carrée, Algiers, in March 1953 has led to a survey involving 4,000 soil samples. The infestation seems limited to seven communes on the coastal strip, close to Algiers, and may have been introduced during the three years from 1943 when the quarantine inspection was poor and when much seed was introduced from England. The local practice of growing two potato crops in one year on the same land may have increased the infestation. The seven communes grow 20% of the total Algerian crop of 2.4 million quintals. Crop rotation is difficult in this area where potatoes and tomatoes are the important cash crops and it may be possible to use D-D mixture economically.

B.G.P.

(99b) Cairaschi points out that the principal factor governing the extent of the damage caused by *Ditylenchus dipsaci* on tobacco in Alsace is the moisture level of the soil during June and July. Root-knot is also present to a small extent. Limitation of tobacco growing and good husbandry would help to control the disease.

J.B.G.

100—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

- a. CAVIER, R. & SAVEL, J., 1954.—" Les effets du jeûne sur les constituants azotés du liquide périviscéral d'*Ascaris lumbricoides* (Linné 1758)." 238 (20), 2035-2037.
- b. CAVIER, R. & SAVEL, J., 1954.—" Le métabolisme protéique de l'ascaris du porc, *Ascaris lumbricoides* Linné, 1758, est-il ammoniotélique ou uréotélique?" 238 (25), 2448-2450.
- c. CAVIER, R. & SAVEL, J., 1954.—" Influence du parasitisme sur le catabolisme des acides nucléiques chez *Ascaris lumbricoides* (Linné 1758)." 239 (2), 205-207.

(100a) Cavier & Savel have studied *in vitro* the effect of starvation on the nitrogen content of perivisceral fluid of *Ascaris lumbricoides*. Protein nitrogen decreases rapidly at first and then more slowly from about the eighth day. Non-protein nitrogen decreases for the first four to five days and then increases. When amino-acids are added to the medium on the sixth day there is an increase in both protein and non-protein nitrogen.

S.W.

(100b) Cavier & Savel have devised an apparatus in which *Ascaris lumbricoides* can be maintained in conditions nearly approaching the natural habitat. Using this they have demonstrated that there is a urea-forming excretory cycle similar to that found in the higher vertebrates.

S.W.

(100c) Cavier & Savel have studied the capacity possessed by *Ascaris lumbricoides* for breaking down nucleic acids. They used a homogenate of the intestine on various substrates at a pH of 7.2 (with a phosphate buffer solution). They found that immature worms (weight less than 2 gm.) showed a greater capacity than did adult worms (weight more than 4 gm.).

S.W.

101—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. TIMON-DAVID, J., 1954.—“Kystes à *Brachylaemus* chez *Cyclostoma elegans* Müll. Développement expérimental du parasite.” 148 (7/8), 708–710.
- b. MAEKAWA, K., KITAZAWA, K. & KUSHIBE, M., 1954.—“Purification et cristallisation de l'antigène pour la dermo-réaction allergique vis-à-vis de *Fasciola hepatica*.” 148 (7/8), 763–765.

(101a) Timon-David found up to 70% of *Cyclostoma elegans* collected in the neighbourhood of Aix-en-Provence to be parasitized by cercariae of a brachylaemid. He describes the cysts and the morphology of the metacercariae which he dissected out and examined alive, with and without neutral red and methyl green acetic as vital stains. Pigeons were refractory to experimental infection but laboratory mice became infected, indicating that the natural definitive host of this species is probably a small rodent or insectivore and not a bird. Details are given of the morphology of the adult which the author believes to resemble *Brachylaemus recurvus* most closely and he assigns it to this species provisionally. S.W.

(101b) Maekawa *et al.* describe the purification of an antigen prepared from *Fasciola hepatica*. The end product was a crystalline fraction with a low water solubility but soluble in phenol, acetic acid and ammonia; it was insoluble in organic solvents. When injected subcutaneously into infected cattle at a dose of 0.03 mg., there was a reaction in 15 to 30 minutes. Other parasites, especially paramphistomes, did not give false positives. S.W.

102—Cornell Veterinarian.

- a. DOUGLAS, J. R., CORDY, D. R. & SPURLOCK, G. M., 1954.—“*Elaeophora schneideri* Wehr and Dikmans 1935 (Nematoda, Filarioidea) in California sheep.” 44 (2), 252–258.

(102a) Nematode larvae were present in scrapings of dermatosis on the head of a ewe from Sutter County, California and of three ewes from Lakeview, Oregon. At autopsy adult *Elaeophora schneideri* were found in the aorta of one animal. The cases reported in sheep previously occurred in Arizona, Colorado, New Mexico and Utah. R.T.L.

103—Countryman. Nicosia.

- a. NEAVE, R. M. S., 1954.—“Worms in poultry.” 8 (6), 15.

104—Current Science. Bangalore.

- a. KALAPESI, R. M. & RAO, S. R., 1954.—“An unusual record of a nematode in an avian kidney.” [Correspondence.] 23 (3), 100.

(104a) In sections of the kidney of an Indian emerald dove, *Chalcophaps indica indica*, portions of a nematode containing fully developed eggs were found but the species could not be identified from the material available. R.T.L.

105—Deutsche Medizinische Wochenschrift.

- a. KÖTTGEN, H. U. & KUSCHINSKY, G., 1954.—“Vergiftungen mit Phenothiazinhaltigen Wurmmitteln.” 79 (7), 241.

(105a) Köttgen & Kuschinsky report eight cases of haemolytic anaemia among children who had been given a phenothiazine preparation in the treatment of helminth infections. Four of the children were known not to have had more than the prescribed dose. All recovered after having been seriously ill. The authors consider that phenothiazine should only be sold against prescription and that such preparations as “worm chocolate” should be discouraged since they can easily lead to a dangerously excessive dose of phenothiazine. A.E.F.

106—Deutsche Tierärztliche Wochenschrift.

- a. ENDREJAT, E., 1954.—“Über die Trichostrongyloidosis der Schafe. Feststellungen, Beobachtungen, Bekämpfung in Nord-Bayern.” 61 (25/26), 255–263.

(106a) Endrejat draws attention to the very high incidence of stomach worms in North Bavarian sheep. Of 5,472 faecal samples examined during 1952, 98% were positive for trichostrongyles: the *Trichostrongylus-Ostertagia* group was most common (in 95%), with *Haemonchus* in 50%. *Ostertagia circumcincta* and *Trichostrongylus vitrinus* occurred most frequently. Endrejat lists three points which he considers essential for the control of infection: (i) proper training of shepherds, (ii) adequate nutrition, with particular reference to the need for ewes' milk and protein for lambs and (iii) prevention of mass infections. The last mentioned is considered to be the most important and measures recommended include treatment of adult sheep in March or April and again, if worm counts show it to be necessary, in summer; treatment of lambs in summer; separate pasturing of sheep and lambs; rotational grazing. Endrejat finally makes the point that although anthelmintic treatment is necessary when infection has occurred, it is not of itself sufficient to prevent mass infections. A.E.F.

107—Dokladi Akademii Nauk SSSR.

- a. SPASSKI, A. A., 1954.—[Pseudoparasitism of *Hymenolepis* in carnivorous animals.] 94 (3), 597–599. [In Russian.]
 b. AKHMEROV, A. K., 1954.—[Parasitic fauna and its specific occurrence in *Oncorhynchus nerka* subsp. *asabatch* Berg, 1932.] 94 (5), 969–971. [In Russian.]

(107a) Spasski discusses the oecological position of the tapeworms of the genus *Hymenolepis*. In his opinion the records of tapeworms of this genus in carnivorous animals are really of species parasitic in other animals and only found in carnivores as part of their food. He questions the validity of *Hymenolepis suricattae* Ortlepp, 1938 and thinks that this species should belong to *Rodentolepis* n.g., in which are placed *R. straminea* (Goeze, 1782) n.comb. as type, and *R. uncinispinosa* (Joyeux & Baer, 1930) n.comb. He considers *H. suricattae* to be a synonym of *R. globirostris* (Baer, 1925) n.comb. *Oligorchis striangulatus*, described by Fuhrmann in 1906 from *Elanoides furcatus*, is believed to be a true parasite of some other bird on which *E. furcatus* had been preying. C.R.

(107b) Akhmerov lists the parasites found in *Oncorhynchus nerka* and *O. nerka asabatch*. In *O. nerka* the following helminths were found: *Scolex polymorphus*, *Proteocephalus exiguus*, *Plerocercoid B* (?), *Echinorhynchus gadi*, *Bolbosoma coeniforme*, *Anisakis* sp., *Contracaecum aduncum*, *Dacnitis truttae* and *Philonema oncorhynchi*. In the subspecies *O. nerka asabatch* there were the following helminths, *Hemiurus levinsemi*, *Sterrhurus* sp., *Lecithaster gibbosus*, *Scolex polymorphus*, *Anisakis* sp. and *Salmincola edwardsii*. The paper also contains a list of parasites of other Salmonidae found in Kamchatka and their incidence. C.R.

108—Down to Earth. Midland, Michigan.

- a. REYNOLDS, H. W., 1954.—“Carrot yields increased in Arizona with soil fumigation.” 9 (4), 5.
 b. NEWSOM, L. D. & MARTIN, W. J., 1954.—“Soil fumigation for control of the nematode-wilt complex of cotton.” 9 (4), 6–7.

(108a) Root-knot nematodes cause much damage to carrots in Arizona. On a heavily infested field ethylene dibromide (Dowfume W-85) was applied to plots at rates of 4½ and 6 gal. per acre. At harvest the carrots were graded for nematode damage, size and quality. The yield of marketable carrots was increased fourfold on the plots treated at the higher rate and threefold at the lower rate. M.T.F.

(108b) The authors make recommendations for the fumigation of soil for nematode control in areas where cotton is affected by a nematode-wilt complex. Profitable increases in yield of cotton are only obtained in severely affected areas. Fumigation must be repeated

each year as nematode populations are frequently higher on treated than on non-treated areas at the end of the growing season. The fumigant should be applied in the rows below where the seed will be sown and at least three weeks before. The soil temperature should be 50-70°F. at a depth of 6 inches and should be left undisturbed for seven to ten days after fumigation. Ethylene dibromide at 2 gal. per acre or D-D mixture at 7 gal. per acre in the row is commercially practicable in Louisiana but rates of application must be carefully controlled.

M.T.F.

109—East African Medical Journal.

- a. GINSBERG, A., 1954.—"Zoonoses in Kenya." 31 (3), 81-88.

(109a) Ginsberg stresses the need for closer co-operation between medical and veterinary workers in order to control zoonoses. As an example he quotes *Taenia saginata*, believed to be very common in man in Kenya, and *Cysticercus bovis* which he estimates to be present in more than 20% of the cattle. In conclusion he lists a number of control measures including the compulsory treatment of infected persons, better training of meat inspectors and compulsory meat inspection.

S.W.

110—Empire Journal of Experimental Agriculture.

- a. SPEDDING, C. R. W., 1954.—"The persistence of the effects of worm infestation in sheep." 22 (85), 55-58.

(110a) As experiments on the effects of intestinal helminth infections of sheep are usually short in duration, Spedding has studied the subsequent gain in live-weight, wool production and carcass quality of the lambs used in his experiment with worm-free twin lambs (reported in the *Empire J. exp. Agric.*, 1953, 21, 255-261) in which he showed that in the first ten weeks after dosing with approximately 75,000 *Trichostrongylus axei* larvae the infected lambs gained only an average of 10.9 lb. per head as compared with 22.6 lb. per head in the control twins. These animals were afterwards kept indoors without reinfection until the 219th day when they were turned out to graze on pasture considered to be fairly heavily contaminated. The data now given show that the adverse effects of the early experimental infection on live-weight gain, wool production and carcass quality persisted for periods up to one year and age resistance had then become fully operative.

R.T.L.

111—Experimental Parasitology. New York.

- a. BRODY, G., 1954.—"Effects of pteroylglutamic acid and vitamin B₁₂ deficiencies in chicks infected with *Ascaridia galli*." 3 (3), 240-250.
 b. GOLDBERG, E. & NOLF, L. O., 1954.—"Succinic dehydrogenase activity in the cestode: *Hymenolepis nana*." 3 (3), 275-284.
 c. ELLIOTT, A., 1954.—"Relationship of aging, food reserves, and infectivity of larvae of *Ascaridia galli*." 3 (4), 307-320.

(111a) Brody briefly reviews previous work on the effect of various vitamin-deficient diets on the resistance of fowls to *Ascaridia galli*. He describes in detail his work with diets deficient in vitamin B₁₂ or pteroylglutamic acid (PGA) or both and his results support the view that the combination of B₁₂ and PGA is biologically equivalent to leucovorin. A simultaneous deficiency of B₁₂ and PGA resulted in an increase in worm burden and in worm length compared with the controls. The addition of B₁₂ decreased worm length. With a deficiency of B₁₂ and PGA the addition of vitamin C decreased both worm burden and worm length but this effect did not occur when B₁₂ was present. A complete absence of pyridoxine caused almost complete mortality in infected birds after four weeks but when small, although suboptimal, amounts were added there was very little mortality although there was an increased worm burden and an increase in worm length.

S.W.

(111b) Goldberg & Nolf describe the use of the redox indicator dye, 2,3,5-triphenyl-tetrazolium chloride, as an indicator of succinic dehydrogenase activity in intact *Hymenolepis nana* under aerobic and anaerobic conditions. They give detailed experimental data and illustrate their paper with tables and two photomicrographs. They found that the dye was not reduced equally in all proglottides of a strobila and suggest that there are permeability differences and an active and selective absorption of carbohydrates by individual proglottides. Sodium malonate inhibited succinic oxidation. The presence of the dehydrogenase was confirmed using methylene blue. S.W.

(111c) Elliott has shown that loss of fat is one of many physiological factors involved in the loss of infectivity of *Ascaridia galli* cultures, and that there is some correlation between the two. The fat content of the embryos and larvae decreased rapidly during the first 90 days and then more slowly reaching a minimum at about 300 days. Infectivity, however, did not decrease appreciably until after about 200 days, when there was a very rapid fall to a minimum between 280 and 300 days although rare infections with occasional worms were obtained with cultures over one year old. S.W.

112—Farming in South Africa.

- a. DU PLESSIS, S. J. & VAN DER LINDE, W. J., 1954—"Inspection of seed potatoes. For government certification." 29 (338), 263-266, 268.
- b. ORTLEPP, R. J., 1954—"Phenothiazine: a remedy for internal parasites." 29 (339), 299-300.

113—Field and Laboratory. Dallas, Texas.

- a. HARRIS, Jr., J. P., 1954—"The parasites of *Necturus*." 22 (2), 52-58.

(113a) Harris summarizes from the literature the parasites of the mud-puppy, *Necturus*. His list includes the helminths *Sphyrnura oligorchis*, *S. osleri*, *S. polyorchis*, *Crepidostomum cooperi*, *C. farionis*, *Neochasmus umbellus*, *Monocaecum baryurum*, *Crepidobothrium lonnbergii* and *Oswaldocruzia subauricularis*. Of the trematodes, *Crepidostomum farionis* is a parasite of fishes rather than of amphibians; its intermediate hosts in Britain are *Pisidium amnicum* and *Sphaerium corneum*. The metacercariae develop in the larva of the mayfly, *Ephemera danica*. R.T.L.

114—Fishery Research and Management Division Bulletin. Maine Department of Inland Fisheries and Game.

- a. MEYER, M. C., 1954—"The larger animal parasites of the fresh-water fishes of Maine." No. 1, 92 pp.

(114a) This bulletin is designed to give anglers and the interested general public an account of the parasites on the fresh-water fishes in the State of Maine, U.S.A., and an outline of their life-histories and effects on their hosts. The commoner species are illustrated by photographs. There is a glossary of the technical terms used. R.T.L.

115—Grower. London.

- a. WEBBER, E. R., 1954—"Root knot eelworm in tomatoes." 41 (9), 473, 475.

(115a) This is a short popular account of root-knot eelworm on tomatoes. For control Webber mentions steam, D-D mixture and parathion. He states that the last is the most promising and should be watered on to the soil about a week after the plants are set at the rate of 1 gal. per sq. yd. using a solution of 1½ pints in 100 gal. of water. M.T.F.

116—Gunma Journal of Medical Sciences.

- a. SAWADA, T., SANO, M. & UENO, T., 1954.—“Studies on the development of *Ancylostoma* larvae in chicken embryo.” 3 (1), 21–28.
- b. SAWADA, T., SUZUKI, I., OKA, T. & SANO, M., 1954.—“Diagnosis of ancylostomiasis by means of intradermal and serological tests.” 3 (1), 29–38.
- c. SAWADA, T., SUZUKI, I., OKA, T. & SANO, M., 1954.—“Studies on the diagnosis of schistosomiasis japonica.” 3 (1), 39–47.

(116a) Infective larvae of *Ancylostoma caninum* were injected into the yolk sac of a chick embryo on the sixth day after incubation or into the allantois of an embryo incubated for ten days. The larvae in the allantois generally developed better than those in the yolk sac and a provisional buccal capsule was present. The larvae of *A. duodenale* made greater growth and development than those of *A. caninum*, particularly those in the allantois. On the tenth day after injection, the sex of the worms could be distinguished and there was a definitive buccal capsule. G.I.P.

(116b) In cases of hookworm in man, precipitin and haemagglutination tests did not give satisfactory results. Protein and polysaccharide fractions prepared from *Ancylostoma caninum* were tested on dogs and men. The antigenic action of the protein fraction was fairly good but that of the polysaccharide fraction was unsatisfactory. G.I.P.

(116c) It is concluded from these studies on the diagnosis of schistosomiasis japonica that the water-soluble protein fraction which is obtained from adult *Schistosoma japonicum* worms by half-saturated ammonium sulphate is more sensitive than the soluble polysaccharide fraction. If the dermal test were improved and a suitable antigen produced, diagnosis by the finding of eggs in the faeces, which the authors consider unreliable, could be eliminated. G.I.P.

117—Hydrobiologia. The Hague.

- a. WIESER, W., 1954.—“Untersuchungen über die algenbewohnende Mikrofauna mariner Hartböden. III. Zur Systematik der freilebenden Nematoden des Mittelmeeres. Mit einer ökologischen Untersuchung über die Beziehung zwischen Nematodenbesiedlung und Sedimentreichtum des Habitats.” 6 (1/2), 144–217.

(117a) Wieser gives a detailed account of his oecological investigations at Portovenere, Sorrento and Sampieri into the free-living marine nematodes of the Mediterranean. Of the 24 species described and figured, 13 are new, viz., *Synonchus dubius* n.sp., *Nasinema stenolaima* n.sp., *Croconema mediterranea* n.sp., *Desmodora ocellata* n.sp., *Praecanthorchus brevisetosus* n.sp., *Prochromadora macro-punctata* n.sp., *Neochromadora brevisetosa* n.sp., *N. amembranata* n.sp., *Chromadora siciliana* n.sp., *Araeolaimus longisetosus* n.sp., *Linhomoeus parmacramphis* n.sp., *Sphärolaimus macrocirculoides* n.sp. and *Megadesmolaimus incisus* n.g., n.sp. *Megadesmolaimus* has two rings of six and four bristles whereas there is only one ring of ten bristles in *Paralinhomoeus* to which it is related. Keys are provided for the species of the genera *Croconema* and *Praecanthorchus*. The species *Chromadora oerleyi*, *C. erythrophthalma*, *C. minor*, *C. armata*, *C. parobtusata*, *C. neoheterophya*, *C. cylindricauda*, *C. suilla*, *Spilophora rognensis* and *Euchromadora strandi* are transferred to *Prochromadora* as new combinations. The species collected at Portovenere and Sorrento and Sampieri are tabulated separately. R.T.L.

118—Indian Journal of Medical Research.

- a. PATEL, J. C., 1954.—“Ankylostomiasis in India: a review with suggestions for future research.” 42 (2), 279–304.

(118a) In this review of the literature of ancylostomiasis in India, Patel deals with the index of infection, the distribution of the two species *Ancylostoma duodenale* and *Necator americanus* in the various provinces, the grades of infection and their significance, the relation of sex, age and habits to infection, the roles of domesticated animals and of insects in disseminating hookworm ova, the relation of the soil type, of climate and of season to infection,

the rate of loss of hookworms in the absence of reinfection, the value of various methods of egg counting and stool examination in determining the incidence of infection, the preservation of ova and larvae in the stool and in the soil, the movements of the larvae in the soil, the relation of the number of hookworms to anaemia, the treatment of hookworm anaemia and other pathological effects of ancylostomiasis. He concludes that present knowledge of hookworm incidence is unreliable and that the distribution of the two species of hookworm should be further investigated.

R.T.L.

119—Indian Journal of Veterinary Science & Animal Husbandry.

- a. VARMA, A. K., 1954.—“Studies on the nature, incidence, distribution and control of nasal schistosomiasis and fascioliasis in Bihar.” 24 (1), 11–33.

(119a) Nasal granuloma due to *Schistosoma nasalis* is prevalent in the State of Bihar, especially in the areas of Piroo and Bikramganj which lie in the centre of the Shahabad district perennially irrigated by the western main canal and in the Patna district irrigated by the eastern main canal, both being derived from a dam on the river Sone near Dehri. In these districts the incidence of infection may reach over 60% in cattle. Buffaloes and goats did not appear to be infected. Although *Limnaea luteola*, the vector in Madras, was predominant in these areas Varma failed to collect infected specimens. Fascioliasis due to *Fasciola indica* was prevalent in the north Gangetic plain watered by the river Kosi. No specimens of *F. hepatica* or *F. gigantica* were present in the flukes collected from buffaloes in Purnea or from goats in Supaul. Varma is dubious of the occurrence of true *F. gigantica* in India. Natural infections of *Indoplanorbis exustus* with a xiphidiocercaria resembling *Cercaria indica* LVII and a new [unnamed] cercaria of the *agilis* group are recorded for the first time.

R.T.L.

120—Indian Veterinary Journal.

- a. RAMANUJACHARI, G. & ALWAR, V. S., 1954.—“*Paryphostomum sufaratyfex* (Lane, 1915) Bhalerao, 1931 in pigs (*Sus scrofa domestica*) in Madras.” 30 (6), 498–500.
 b. RAMANUJACHARI, G. & ALWAR, V. S., 1954.—“Parafilariasis(?) of elephants.” 31 (1), 37–40.
 c. ANANTARAMAN, M., 1954.—“The prevention of helminthiasis in ruminants by scheduled treatments based on seasonal conditions in the Madras State.” 31 (1), 40–45.
 d. RAMANUJACHARI, G. & ALWAR, V. S., 1954.—“A check-list of parasites, (Classes—Trematoda, Cestoda and Nematoda) in the Department of Parasitology, Madras Veterinary College. (Additions since 1947.)” 31 (1), 46–56.

(120a) Ramanujachari & Alwar found *Paryphostomum sufaratyfex* in two out of 54 pigs examined in Madras State. Eggs were collected and cultured at room temperature in tap-water which was changed daily and miracidia hatched in eleven days. *Limnaea luteola* and *Indoplanorbis exustus* were exposed to the miracidia which penetrated *L. luteola*. As all the snails died after about two days no further observations could be made.

S.W.

(120b) This is the first record of microfilariae in elephants in India. They were present in cutaneous haemorrhagic nodules which suggests a *Parafilaria* infection. The microfilariae measure on the average 0.25 mm. by 0.01 mm. and are similar in size to those of *Parafilaria multipapillosa*. They are larger than those of *Filaria elephantis* in Burma and of *Loxodontofilaria loxodontis* in Africa.

G.I.P.

(120c) This article, intended mainly for the laity, deals with the routine drenching of apparently healthy animals carrying early infections of immature helminths or harbouring worms in numbers insufficient to cause clinical symptoms. It is recommended that in the Madras area treatment for flukes and tapeworms should be correlated with the wet and cold seasons of the year, but for nematode infections should be maintained monthly throughout the year.

G.I.P.

121—Japanese Journal of Medical Science and Biology.

- a. KOMIYA, Y. & ISHII, K., 1954.—“The shedding aspect of cercariae of *Schistosoma japonicum* from its snail host, *Oncomelania nosophora*, in Japan.” 7 (1), 25–37.
- b. ISHII, K. & YANAGISAWA, T., 1954.—“Structure of the female reproductive organ of pig ascaris.” 7 (1), 95–109.

(121a) In a study of the shedding of *Schistosoma japonicum* cercariae from *Oncomelania nosophora*, Komiya & Ishii found that the critical factor was the length of time for which the snails were submerged and that there was no significant difference in the shedding rates by day or by night. About 80% to 85% of cercariae with fully developed furcal rami were shed within 90–119 hours of submersion. After 9–10 hours 66% of the snails were shedding and almost all of them after 22 hours. The peak of shedding was reached by 17 snails in 10 hours and 67 in 21 hours. At the end of the experiment the snails were dissected and the numbers of developing cercariae counted. S.W.

(121b) Ishii & Yanagisawa have made a detailed histological study of the female reproductive system in *Ascaris lumbricoides* from the pig. They conclude that it is divided into two main parts, (i) an ovary consisting of a layer of epithelial cells and an outer basal membrane and (ii) the oviduct, seminal receptacle, uterus and vagina which are made up of an inner glandular epithelial layer with binucleate cells, a middle basal membrane and an outer muscle layer. The paper is illustrated by 27 photomicrographs. S.W.

122—Journal of Agriculture of the University of Puerto Rico.

- a. ALVAREZ-GARCIA, L. A. & LÓPEZ-MATOS, L., 1954.—“Influence of root-knot nematodes on the decline in vigor of the Red Spanish variety of pineapple in Puerto Rico.” 38 (1), 61–72. [Spanish summary pp. 71–72.]

(122a) Five different nematicidal soil fumigants were applied to plots in a field which had been cropped for about 20 years with pineapples which yielded very poorly and carried a heavy infestation of root-knot nematodes. Pineapple slips were planted 15 days later and at monthly intervals five different spray treatments (for control of leaf spot, chlorosis and fruit rot) were given to plants in each of the soil fumigant treatments. Healthier plants giving increased yields and more fruits of the larger sizes were produced on the plots treated with nematicides as compared with the controls. Highest yields came from plots treated with Dowfume W-85 (ethylene dibromide 40% by volume at 6 c.c. per sq. ft.). Dowfume W-40 (ethylene dibromide 20% by volume at 9 c.c. per sq. ft.) gave second best results followed by D-D mixture (50% by volume at 6 c.c. per sq. ft.), Dowfume N (the same chemical and rate) and Dowfume G (a mixture of 10% methyl bromide by volume, carbon tetrachloride and ethylene dichloride, at 6 c.c. per sq. ft. of soil). The numbers of suckers and slips produced on the fumigated plots were considerably more than on the controls. No mention is made of the presence or absence of nematodes or of galls on the roots in any treatments. M.T.F.

123—Journal of the American Medical Association.

- a. ANON., 1954.—“Excreta from toilets on trains.” [Correspondence.] 154 (1), 102.
- b. GOULD, S. E., GOMBERG, H. J. & BETHELL, F. H., 1954.—“Control of trichinosis by gamma irradiation of pork.” 154 (8), 653–658.

(123a) American railways tend to run in valleys in the flat lands of which cattle are often pastured and feed is cut from these meadows. An anonymous writer suggests that the higher incidence of *Cysticercus bovis* in certain areas may result from contamination by faeces from rail passengers and employees. R.T.L.

(123b) Gould *et al.* have tested the effect of Cobalt 60 irradiation on trichinous pork and the effect of irradiation with waste fission products. Both were applied to joints weighing about 23 kg. Chemical dosimeters were distributed throughout the meat to measure the radiation and it was found that the dose varied (approximately) inversely with the square of

the distance from the source. The efficacy was estimated by feeding 5,000 larvae from irradiated meat to rats and comparing the findings with those from rats fed the same number of larvae from non-irradiated meat. With a dose of 9,500r to 10,350r from Cobalt 60, 74% to 98% of the adult females were sterile. All adult females were sterile after a dose of 11,830r. Radiation from the fission products appeared to produce the same results at doses about 10% lower, although the reason for the greater effectiveness was not known. As these are waste products they may prove to be of economic and practical value in the treatment of trichinosis pork. No difference in flavour of the irradiated pork was detectable and as no radiation is stored in the meat no known harmful effect can result from eating it. S.W.

124—Journal of the American Pharmaceutical Association. Scientific Edition.

- a. BOND, H. W. & LUTTERMOSER, G. W., 1954.—“Studies on the chemotherapy of experimental schistosomiasis. II. N-(9-xanthenyl) amides.” 43 (1), 32–35.

(124a) Bond & Luttermoser have tested 26 carboxamide and nine sulphonamide derivatives of xanthidrol for activity against *Schistosoma mansoni* in mice. The activity of miracil-D was used as the standard of reference. None was as effective as miracil-D although four of the alkylcarboxamide derivatives and one of the sulphonamide derivatives showed comparable activity. Only the chloroacetamide and the α -toluenesulphonamide derivatives prolonged the survival time of the mice. S.W.

125—Journal of the American Veterinary Medical Association.

- a. STUEBEN, E. B., 1954.—“Incidence of infection of dogs and fleas with *Dirofilaria immitis* in Florida.” 125 (928), 57–60.
b. TOPACIO, T. M. & NOBLE, G. A., 1954.—“Fatal aortic spirocerosis in a dog.” 125 (929), 133.

(125a) Under natural conditions, 35% of the 1,203 *Ctenocephalides felis* collected from 71 dogs in Florida were found infected with larvae of *Dirofilaria immitis*. Microfilariae were present in 63% of 142 dogs. Adults were found in 54 dogs, four of which had not shown microfilariae in the blood although the females were fertile. There was no difference in the incidence of infection in long and short-haired dogs. R.T.L.

(125b) In the Philippines dogs are frequently infected with *Spirocerca lupi* but fatalities are not common. In the case now reported, sudden death was due to extensive haemorrhage into the pleural cavity from a ruptured aorta. There were numerous nodules and coiled worms in the aorta which at some places was one inch thick. R.T.L.

126—Journal of Animal Science.

- a. RICHARD, R. M., SHUMARD, R. F., POPE, A. L., PHILLIPS, P. H. & HERRICK, C. A., 1954.—“The effect of phlebotomy versus stomach worm, *Haemonchus contortus*, infection on the growth and certain blood constituents of lambs.” 13 (1), 274–282.

(126a) When lambs about 3½ months old were infected experimentally with 40,000 *Haemonchus contortus* larvae a fall in the haemoglobin occurred ten days later. Paired lambs of similar weight and age were then subjected to phlebotomy. The amount of blood removed was sufficient to keep the haemoglobin level comparable with that of the infected lambs. No significant difference was observed. In the phlebotomized lambs the decrease in the haemoglobin level was followed by a marked diminution in the rate of decline after which it remained relatively constant. There was a similar arrest in the anaemia of the infected lambs due probably to an increased haemopoietic response. Mineral supplements, with or without protein, gave the greatest resistance to the development of anaemia. In those lambs receiving the basal ration plus minerals the average daily gain was 0.44 lb., with protein and minerals it was 0.42 lb., but in those receiving protein as the only supplement the average daily gain was only 0.25 lb. R.T.L.

127—Journal of the Animal Technicians Association. London.

- a. CUSHNIE, G. H., 1954.—“The life cycle of some helminth parasites of the rat, mouse and rabbit.” 5 (1), 22-25.

(127a) Cushnie provides animal technicians with a useful resumé of the helminths which parasitize laboratory animals, describes the life-cycles of those which commonly occur in rats, mice and rabbits and gives suggestions on their control. R.T.L.

128—Journal of Comparative Pathology and Therapeutics.

- a. SPEDDING, C. R. W., 1954.—“Effect of a sub-clinical worm-burden on the digestive efficiency of sheep.” 64 (1), 5-14.

(128a) In this paper, which is illustrated by a number of statistical tables, Spedding describes experiments in which the feed intake and digestive efficiency of worm-free lambs were compared with those of their twins infected with *Trichostrongylus axei* and *Strongyloides papillosus*. In five out of the six pairs of twins used the infected lamb consumed less food than its twin and in the sixth pair there was relatively little difference. In the control group feed intake could not be related to increase in live-weight. The general level of digestibility in infected lambs was lower than in worm-free lambs; this was particularly evident in the digestion of crude protein, there being no significant difference in the digestion of crude fibre. The effect of an 8% depression of appetite combined with a lowered digestive efficiency in infected lambs is that of a 10% loss in food. The author suggests that it is these two factors which are mainly responsible for the depression of live-weight gains in infected lambs. S.W.

129—Journal of Experimental Zoology.

- a. GOCHNAUER, M. B. & MCCOY, E., 1954.—“Response of a soil nematode, *Rhabditis briggsae*, to antibiotics.” 125 (3), 377-406.

(129a) Gochnauer & McCoy investigated the effects of penicillin, streptomycin and streptolin on eggs, larvae and adults of *Rhabditis briggsae*. All three antibiotics have a deleterious effect on the hatching of eggs. Subinhibitory levels of penicillin and streptolin stimulated activity of the nematode. Ranges between the threshold concentrations for inhibition of motility of larvae and the acute toxic levels are given for the three antibiotics, the ratio of the two values being different for each substance. For penicillin and streptomycin within the inhibitory ranges, the sensitivity of larvae was proportional to concentration but this was not so with streptomycin. There was evidence of recovery of larvae from low concentrations of streptolin but not from penicillin. Exposure of adults to certain concentrations of streptomycin and streptolin stimulated egg production: this was not so with penicillin. Adaptation of larvae to withstand penicillin and streptomycin was observed but not to streptolin. No common factor could be found for comparing either acute toxicities or for threshold concentrations for the nematode and the mouse. Extensive data are given in this paper in support of the authors' findings. D.W.F.

130—Journal of the Fisheries Research Board of Canada.

- a. MARGOLIS, L., 1954.—“List of the parasites recorded from sea mammals caught off the west coast of North America.” 11 (3), 267-283.

(130a) The helminths of marine mammals of the North American west coast recorded up to July 1953 are listed. Several species from sea-lions which died in various zoological parks are included. The host, location, localities and recorder of each species are given. The species are also arranged under their hosts. R.T.L.

131—Journal of the Medical Association of the State of Alabama.

- a. HOSTY, T. S., WELLS, D. M., FREEAR, M. A. & WHITFIELD, N. K., 1954.—“Hookworms in Alabama.” 23 (7), 179-182.

32—Journal of Morphology.

- a. NAJARIAN, H. H., 1954.—“Developmental stages in the life cycle of *Echinoparyphium flexum* (Linton, 1892) Dietz, 1910 (Trematoda: Echinostomatidae).” 94 (1), 165-197.

(132a) Najarian gives a detailed account of the adult and the various larval stages of *Echinoparyphium flexum*. Adults were obtained from naturally infected *Anas discors*. The eggs hatched in 9 to 14 days. The miracidia penetrated young *Limnaea palustris* and were found in the heart within seven hours. Sporocysts were found within 24 hours. Mother rediae were first seen within the heart in nine days. They had migrated to the digestive gland and ovotestis at 10-12 days and produced daughter rediae in which recognizable cercarial embryos were seen at 33 days. They began to emerge through the respiratory aperture after the 40th day. The metacercariae occurred in the kidney and heart of *L. palustris* and in the kidneys of frogs and tadpoles including *Rana clamitans*, *R. pipiens*, *R. sylvatica*, *Hyla crucifer* and *Pseudacris nigrita triseriata*. Tadpoles but not adults were easily infected. Chickens were experimentally infected but lost their infection in six to eight weeks. R.T.L.

33—Journal of Parasitology

- a. SMITH, C. F., 1954.—“Four new species of cestodes of rodents from the High Plains, Central and Southern Rockies and notes on *Catenotaenia dendritica*.” 40 (3), 245-254.
 b. MILLER, J. H., 1954.—“Studies on the life history of *Posthodiplostomum minimum* (MacCallum 1921).” 40 (3), 255-270.
 c. THIEL, P. H. VAN, 1954.—“Trematode, gregarine and fungus parasites of *Anopheles* mosquitoes.” 40 (3), 271-279.

(133a) Four new cestodes are reported from rodents in the U.S.A. (i) *Hymenandrya homomyis* n.g., n.sp. from the northern pocket gopher (*Thomomys talpoides* subsp.) has, like *Andrya*, a reticulate uterus, a pyriform-like apparatus and the vaginal opening is posterior to the cirrus pouch but differs from *Andrya* in that the pyriform apparatus has a polar extension at either end and that the 7 to 15 testes are in aporal and poral groups divided by the ovary and vitellarium, an arrangement which recalls their position in the hymenolepids. It is suggested that a re-examination of the materials on which the genera *Chitinolepis* and *Pseudogorchis* were based might show that they are anoplocephalids nearly related to *Hymenandrya*. (ii) *Railletina* (*Railletina*) *sigmodontis* n.sp. from *Sigmodon hispidus texianus* resembles *R. (R.) bakeri* but the testes number 15 to 19, the number of egg capsules per segment is 10 to 35, the number of eggs per egg capsule 15 to 25 and the cirrus pouch measures $140\mu \times 46\mu$. (iii) *Catenotaenia peromysci* n.sp. from the deer mouse (*Peromyscus maniculatus rufinus*) is closely related to *C. pusilla* but the larger portion of the ovary extends longitudinally in the aporal half of the proglottis and the uterus has 25 or more primary branches on each side. (iv) *Catenotaenia laguri* n.sp. from the sage brush vole (*Lagurus curtatus levidensis*) is similar to *C. geosciuri* but differs in possessing 35 to 40 testes in each of two groups and in having 35 to 40 primary uterine branches. *C. linsdalei* McIntosh, 1941 is considered a synonym of *C. dendritica* Goeze, 1782) Janicki, 1904 which is now reported from *L. curtatus levidensis* for the first time. R.T.L.

(133b) Miller reports on a carefully controlled experimental study of the life-history of *Posthodiplostomum minimum*. *Physa heterostropha* was mostly used as first intermediate host and *Lepomis gibbosus* and *L. megalotis* as second intermediaries. The cercaria obtained differed morphologically from *C. multicellulata* and *C. louisiana* both of which have previously been reported as the cercaria of *P. minimum*. The metacercaria is identical with *Neascus van cleavi*. It reaches its site of development in the secondary host by passive migration via the circulatory system. Miller criticizes the earlier work of Ferguson on the hosts of *P. minimum* [for abstract see Helm. Abs. 12, No. 183f]. G.I.P.

(133c) Attention is drawn to the omission from Christophers' account of the recorded parasites of mosquitoes [for abstract see Helm. Abs., 21, No. 34a] of the papers on the life-history of *Agamodistomum anophelis*, published by van Thiel between 1921 and 1930. G.I.P.

133—Journal of Parasitology (cont.)

- d. ALEXANDER, C. G., 1954.—"*Microcotyle macracantha* n.sp., a monogenetic trematode from the Gulf of California, with a redescription of *Amphibdelloides maccallumi* (Johnston and Tiegs, 1922) Price, 1937." 40 (3), 279-283.
- e. HOPP, W. B., 1954.—"Studies on the morphology and life cycle of *Neoechinorhynchus emydis* (Leidy), an acanthocephalan parasite of the map turtle, *Graptemys geographica* (Le Sueur)." 40 (3), 284-299.
- f. THORSON, R. E., 1954.—"Absorption of protective antibodies from serum of rats immune to the nematode, *Nippostrongylus muris*." 40 (3), 300-303.
- g. DICKERMAN, E. E., 1954.—"*Paurorhynchus hiodontis*, a new genus and species of Trematoda (Bucephalidae: Paurorhynchinae n.subfam.) from the mooneye fish, *Hiodon tergisus*." 40 (3), 311-315.
- h. WONG, L. W., 1954.—"Evidence of tissue invasion in chicks by *Euhaplorchis californiensis* Martin, 1950, (Trematoda: Heterophyidae)." 40 (3), 316-321.
- i. STEWART, T. B., 1954.—"The life history of *Cooperia punctata*, a nematode parasitic in cattle." 40 (3), 321-327.

(133d) *Microcotyle macracantha* n.sp. is recorded and figured from the gills of *Mugil cephalus* in the Gulf of California. It is separated from other species by the large size of the atrial spines. Recurved points on all the spines distinguish it from *Microcotyle cephalus* which has recurved points on the anterior pair of spines only. Moreover the right caecum terminates at the anterior end of the haptor. The anterior suckers are armed and septate and the testess are small and number from 152 to 213. G.I.P.

(133e) Hopp gives the life-cycle of *Neoechinorhynchus emydis*. When the eggs are ingested by *Cypria maculata* the acanthors enter the body-cavity where they develop into unencysted juveniles in 21 days. When the infected ostracods are eaten by *Campeloma rufum* the juveniles encyst in the tissues, especially of the foot, and become adult when the snails are eaten by the turtle, *Graptemys geographica*. G.I.P.

(133f) When rats were repeatedly infected with *Nippostrongylus muris* antibodies were absorbed from the serum by a saline extract of ground-up lyophilized larvae or by salines containing secretions and excretions of living larvae. In the former instance the immune serum lost none of its protective capacity when injected with infective larvae into rats but in the latter instance its protective capacity was partly removed. This work provides experimental support for Sarles' hypothesis [for abstract see Helm. Abs., 7, No. 110a] that secretions and excretions stimulate the formation of protective antibodies. R.T.L.

(133g) Dickerman describes and figures *Paurorhynchus hiodontis* n.g., n.sp., parasitic in *Hiodon tergisus*, from Lake Erie and its southern tributaries. He places it in Paurorhynchinae n.subf. Immature specimens were found in the liver and the mature forms in the body-cavity. *P. hiodontis* is separated from other bucephalids by (i) the size of its body which measures 6.38 mm. by 1.68 mm., (ii) the absence of spines, (iii) the lobed gonads and (iv) the location of the adults in the host. The miracidium has five ciliated plates and two pairs of unjointed appendages. G.I.P.

(133h) In chicks experimentally infected with metacercariae of *Euhaplorchis californiensis* in brains of *Fundulus parvipinnis*, only a small number of the young flukes invaded the intestinal wall and it appears that these subsequently returned to the intestinal lumen. 67% of the worms were found between the villi. Once the chicks had overcome an initial infection, continuous feeding with infected fish brains did not result in further infection. G.I.P.

(133i) Stewart has completed the life-cycle of *Cooperia punctata*, parasitic in cattle. This conforms closely to that of *C. curticei* in sheep. After hatching the first-stage larva moults in 30 hours and in 96 hours the third-stage larva emerges. It exsheaths 24 hours after ingestion by the calf. The fourth stage is reached on the fourth day after the infection and the fourth ecdysis takes place during the seventh day. The genital organs are present at this stage. The posterior end of the female tapers to a sharp point while the male is swollen around the anus. The worms are nearly mature on the tenth day. G.I.P.

133—Journal of Parasitology (cont.)

- j. MACY, R. W. & MOORE, D. J., 1954.—“On the life cycle and taxonomic relations of *Cephalophallus obscurus* n.g., n.sp., an intestinal trematode (Lecithodendriidae) of mink.” 40 (3), 328–335.
- k. CLARK, D. T., 1954.—“A new cyclophyllidian cestode from the avocet.” 40 (3), 340–346.
- l. NEWTON, W. L., 1954.—“Tissue response to *Schistosoma mansoni* in second generation snails from a cross between two strains of *Australorbis glabratus*.” 40 (3), 352–355.
- m. ARAI, H. P., 1954.—“Helminth parasites of embiotocid fishes. I. A new genus of the trematode family Zoogonidae.” 40 (3), 356–359.
- n. EL SEA, J. R., 1954.—“An unsuccessful attempt to establish *Eustrongylides* in the black-crowned night heron, *Nycticorax nycticorax hoacthi*.” 40 (3), 362–363.
- o. KRUIDENIER, F. J., 1954.—“A seal host of the acanthocephalan *Corynosoma*: correction.” 40 (3), 363–364.
- p. GUILFORD, H. G., 1954.—“Parasites found in the sea lamprey, *Petromyzon marinus*, from Lake Michigan.” 40 (3), 364.

(133j) *Cephalophallus obscurus* n.g., n.sp. is described and figured from north-western Oregon. The adults were found in the anterior portion of the small intestine of *Mustela vison* which had been fed on naturally infected *Astacus trowbridgii* containing large numbers of metacercariae. The metacercariae were experimentally produced in the crayfish from a virgulate xiphidiocercaria obtained from an oval sporocyst found in the snail, *Flumenicola vires*.
G.I.P.

(133k) A description and figures are given by Clark of *Eurycestus avoceti* n.g., n.sp. from the small intestine of *Recurvirostra americana* from Nebraska. *Eurycestus* has a coiled vagina. As in *Cougnia* the testes are posterior to the ovary but *Eurycestus* has a much smaller and poorly developed cirrus. The new genus cannot yet be placed in any family of Cyclophyllidea.
G.I.P.

(133l) Twenty-nine *Australorbis glabratus* were each infected with 20 miracidia of a Puerto Rican strain of *Schistosoma mansoni*. The snails were the F₂ generation originally obtained from a cross between a susceptible Puerto Rican strain and a non-susceptible Brazilian strain. Previous work had shown that in the Brazilian strain there was a cellular reaction against the parasite which was destroyed 24 to 48 hours after penetration. The F₂ snails, fixed and examined 54 hours after exposure, showed either a tissue reaction characteristic of one of the parent types or appeared to be intermediate. In five cases normally developing parasites and those eliciting cellular response followed by destruction of the parasite were found in the same snail. It is suggested that variation is possible in the susceptibility of the snail as well as in the ability of the parasite to survive and develop.
G.I.P.

(133m) Arai describes *Neozoogonus californicus* n.g., n.sp. from the intestine of *Embiotoca jacksoni* in California. The new genus is distinguished from *Zoogonus* by the presence of broader and larger caeca, the more compact genitalia and by a neck-like constriction between the suckers and the body. It resembles *Zoogonus* in having the intestinal bifurcation posterior to the ventral sucker. As in *Zoogonoides acanthogobii* the new species has a saccular structure which extends from the uterus near the metraterm and is probably another accessory receptaculum seminis.
G.I.P.

(133o) In 1953 Van Cleave reported on three acanthocephalan species of *Corynosoma* collected from the grey seal “*Halichoerus grypus*” by Hadwen at Unalakleet [for abstract see Helm. Abs., 22, No. 33a]. This seal has a very limited range and only very occasionally enters the arctic waters. The designation “grey seal” is commonly used in Alaska for the “grey harbour seal” *Phoca richardi*. Kruidenier believes that it was this species from which Hadwen collected his material. Grounds are also given for the conclusion that the locality Unalakleet given by Van Cleave should be Unalakleet, Alaska.
R.T.L.

(133p) Seven helminth species were found in 76 specimens of *Petromyzon marinus*. Three were new for this host, viz., (i) *Proteocephalus exiguus*, which was the most frequent, with an average of 7.2 worms per host, (ii) a single *Neoechinorhynchus cylindricus* and (iii) one larval *Cystidicola stigmatura*.
G.I.P.

133—Journal of Parasitology (cont.)

- q. NAGATY, H. F., 1954.—"Trematodes of fishes from the Red Sea. Part 5. On three new opelcoelids and one mesometrid." 40 (4), 367-371.
- r. SUGIURA, S., SASAKI, T., HOSAKA, Y. & ONO, R., 1954.—"A study of several factors influencing hatching of *Schistosoma japonicum* eggs." 40 (4), 381-386.
- s. SELF, J. T., 1954.—"Parasites of the goldeye, *Hiodon alosoides* (Raf.), in Lake Texoma." 40 (4), 386-389.
- t. MOORE, D. V. & MELENEY, H. E., 1954.—"Comparative susceptibility of common laboratory animals to experimental infection with *Schistosoma haematobium*." 40 (4), 392-399.

(133q) From fishes caught at Ghardaga on the Red Sea, Nagaty describes four new trematodes. *Opelcoelus adelongatus* n.sp., from the intestines of *Upeneoides vittatus* arm. *Mulloidides auriflamma*, differs from *O. elongatus* in possessing two pairs of median digitiform papillae on the acetabulum and in the shape of the peripheral papillae. *Opelcoelus upeneoides* n.sp. from the gut of *U. vittatus* closely resembles *O. adelongatus* but differs in having almost complete gonads, the vitelline follicles are less profusely developed and the testes are situated more posteriorly. *Opelcoelus thapari* n.sp. from the same host can be differentiated from *O. adspheericus* by its smaller size, the presence of four pairs of acetabular papillae, the entire ovary and the longer and straight vesicula seminalis. The mesometrid *Arthuroloossia loosi* n.g., n.sp. was obtained from *Pseudoscarus harid* and *Teuthis oramen*. The new genus can be distinguished from *Centroderma* to which it approaches most nearly by the elongated body shape, the setting of the oral sucker deep in the parenchyma, the elongated and obliquely placed testes, the entire and spheroid ovary and the large size of the irregularly shaped vitelline follicles.

R.T.

(133r) The hatching of *Schistosoma japonicum* eggs is often inconsistent even when they are obtained from faeces of the same individual. The authors have sought an explanation of this. They find that hatching occurs freely from 10°C. to 30°C., and although it may take place in the dark it was increased by 60% by light. Centrifugation had no effect. Faecal decomposition and the mixing of the faeces with that of carnivores tended to suppress hatching possibly due to the greater protein intake.

R.T.

(133s) *Hiodon alosoides*, a common fish of Lake Texoma, frequently harbours *Bothriocephalus texomensis* n.sp. This is closely related to *B. cuspidatus* but the scolex, which is roughly rectangular, has a dominant terminal disc which is not bilobed. The vitelline follicles number only 400 to 450. The vitellaria occupy two distinct fields and are not united. Each segment always has 8 instead of 32 subsegments. It also differs from *B. cuspidatus hiodoni* which has an inconspicuous apical disc, shallow bothria and a relatively short scolex which is pointed anteriorly. The occurrence of *Crepidostomum illinoiense* Hopkins in *H. alosoides* is recorded for the first time. The original specimens are redescribed and figured.

R.T.

(133t) Moore & Meleney have sought to ascertain which of the laboratory animals—albino mice, Syrian hamsters, albino rats, guinea-pigs and rabbits, was the most satisfactory host for experimental work on *Schistosoma haematobium* by percutaneous infection. Albino rats, guinea-pigs and rabbits proved to be nearly or completely refractory. In mice the worms attained sexual maturity in 12 weeks to 14 weeks but over 50% of the mature worms were in the liver. No bladder lesions occurred. Viable eggs first appeared in the faeces 15 weeks after exposure. The most suitable animal was the hamster. 16.9% of the cercariae employed were recovered as adult worms 10 weeks after exposure and a considerable proportion of the worms deposited eggs in the intestinal wall especially in the ascending and transverse colon, with the greatest concentration in the hepatic flexure. Viable eggs appeared in the faeces in 10 weeks. Only in a few hamsters were there lesions in the bladder; the earliest were observed 14 weeks after infection.

R.T.

133—Journal of Parasitology (cont.)

- u. JUNG, R. C., 1954.—"The predominance of single-brood infections in human ascariasis." 40 (4), 405-407.
- v. VOGEL, M., 1954.—"Exogenous proliferation in a larval taeniid (Cestoda: Cyclophyllidae) obtained from the body cavity of Peruvian rodents." 40 (4), 411-413.
- w. WONG, L. W., 1954.—"Some factors affecting the intensity of *Euhaplorchis californiensis* (Trematoda: Heterophyidae) infections in chicks." 40 (4), 414-418.
- x. LEVINE, N. D. & IVENS, V., 1954.—"The toxicity of some alkyl sodium sulfate detergents for horse strongyle (Nematoda) eggs and larvae." 40 (4), 419-423.
- y. KAGAN, I. G., SHORT, R. B. & NEZ, M. M., 1954.—"Maintenance of *Schistosomatum douthitti* (Cort, 1914) in the laboratory (Trematoda: Schistosomatidae)." 40 (4), 424-439.

(133u) The *Ascaris lumbricoides* obtained from seven patients with massive infections were measured. The sizes indicated that in each case the worms were of about the same age. It is suggested that an earlier infection with *Ascaris* may prevent the development of worms which enter the body subsequently and that, with few exceptions, infections are derived from eggs ingested at the same time or over a short period. R.T.L.

(133v) The exogenous proliferation exhibited by cysticerci which occur in the body-cavity of the Peruvian rodents, *Ctenomys peruanus*, *Phyllotis osilae* and *Chinchillula sahamae*, is illustrated and described. It appears to be a normal feature in the development of an unidentified species of *Taenia*. R.T.L.

(133w) By varying their diet and by withholding food Wong has sought to ascertain the factors affecting the intensity of infection of chicks with *Euhaplorchis californiensis*. The chicks were experimentally infected with metacercariae which became adult in four to six days. The chicks were killed on the sixth day. Those fed on an oatmeal diet harboured a larger number of adult worms than those on an all-purpose feed. Those given access to food at all times had the lowest number of worms; those on an oatmeal diet and from which food was withheld for 5 or 10 hours after the infective feed were the most heavily infected. Chicks on a milk diet had fewer adult flukes than those fed on oatmeal. R.T.L.

(133x) The toxic effects of three anionic detergents, Tergitol 7, 4 and 08, were tested against the washed eggs and larval stages of horse strongyles in water and in horse faeces. The surface active ingredients of these detergents are alkyl sodium sulphates. Tergitol 7 was the most toxic being about twenty times as active as Tergitol 4 and almost 100 times as active as Tergitol 08. They were all much less effective in faeces than in water. Tergitol 7 and Tergitol 08 killed or prevented the development of all larvae at 2.5% but not at 1% concentration. In faeces Tergitol 4 was the most effective; a concentration of 1% but not of 0.5% killed or prevented the development of all larvae and eggs whereas Tergitol 7 and Tergitol 08 required 2.5%. [A portion of this work was published in 1952. For abstract see *Helminth. Abs.*, 21, No. 230cm.] R.T.L.

(133y) Descriptions are given of the techniques used by the authors for their experimental work on *Schistosomatum douthitti*: (i) to rear colonies of the intermediate hosts, *Limnaea stagnalis appressa* and *L. palustris*, in aquaria trays and fingerbowls; (ii) to obtain miracidia from liver tissue; (iii) to infect young snails; (iv) to obtain cercariae from infected snails; (v) to expose laboratory animals to infection by immersion or by placing the cercariae on the host; and (vi) to recover the worms rapidly. A series of tables give data on the longevity of *L. palustris* after exposure to 3 to 5 miracidia, the percentage of infection acquired by different age groups of *L. palustris* exposed to one miracidium, the susceptibility of mice to varying numbers of miracidia applied by the loop technique, the distribution of worm counts in 300 mice exposed to 50 miracidia each, and the lengths of the incubation periods of snails 23-25 days old when exposed to one miracidium. R.T.L.

133—Journal of Parasitology (cont.)

- z. BUTLER, J. M. & GRUNDMANN, A. W., 1954.—“The intestinal helminths of the coyote *Canis latrans* Say, in Utah.” 40 (4), 440-443.
- ba. FISHER, Jr., F. & WEBSTER, J. D., 1954.—“A new strigeid trematode from the pectoral sandpiper.” 40 (4), 444-445.
- bb. SARMIENTO, L., 1954.—“*Gigantorhynchus ortizi* n.sp., an acanthocephalan from *Metachirus nudicaudatus*.” 40 (4), 448-452.
- bc. DEWITT, W. B., 1954.—“Susceptibility of snail vectors to geographic strains of *Schistosoma japonicum*.” 40 (4), 453-456.
- bd. RUSSELL, C. M., 1954.—“The effects of various environmental factors on the hatching of eggs of *Plagitura salamandra* Holl (Trematoda: Plagiorchiidae).” 40 (4), 461-464.
- be. VILLELLA, J. B., 1954.—“*Ventridens ligera*, a new first intermediate host of *Panopistius pricei* Sinitsin, 1931 (Trematoda: Brachylaimatidae).” 40 (4), 470-472.

(1332) Twelve species of helminths were collected from the intestines of 75 *Canis latrans* in the State of Utah, viz., *Toxascaris leonina*, *Toxocara canis*, *Protospirura numidica*, *Passalurus nonannulatus*, *Dermatoxys veligera*, *Taenia pisiformis*, *T. rileyi*, *T. krabbei*, *T. hydatigena*, *Multiceps packii*, *Mesocostoides kirbyi* and *Dipylidium caninum* which is a new record for this host. Search for *Echinococcus granulosus* was negative. R.T.L.

(133ba) *Strigea eroliae* n.sp. from a pectoral sandpiper, *Erolia melanotos*, in Texas. differs from *S. intermedia* in the position of the holdfast organ which protrudes anteriorly and in the limitation of the vitelline follicles of the region anterior to the holdfast. The small size of the genital atrium and the very small bursa copularis distinguish it from *S. micollis*. The genital atrium opens dorsally whereas in *S. falconis* it opens posteriorly. The genus *Strigea* has hitherto been recorded from shore birds only in Australia. R.T.L.

(133bb) Sarmiento reports *Gigantorhynchus ortizi* n.sp. from a rat-tailed marsupial, *Metachirus nudicaudatus*, collected in the jungle in La Merced, Peru: there is a nuclear collar at the anterior portion of the trunk. In *G. ortizi* there are two longitudinal grooves, one dorsal and one ventral, whereas in *G. lutzi* which alone it resembles there are one dorsal and two lateral grooves. The testes are smaller than in *G. lutzi* and the cement glands are compact and not separated. R.T.L.

(133bc) DeWitt describes a series of experiments on the susceptibility of laboratory-reared specimens of *Oncomelania nosophora* from Japan, *O. hupensis* from China, *O. formosana* from Formosa, *O. quadrasi* from the Philippines and *Pomatiopsis lapidaria* to infection by *Schistosoma japonicum* derived from Shanghai (China), Kofu (Japan) and Chang Hwa (Formosa). *O. nosophora* was susceptible to the Japanese and Formosan but not to the Chinese strain. *O. formosana* and *O. quadrasi* became infected by the Formosan strain but were resistant to those from China and Japan. *P. lapidaria* was infected with the Chinese and Formosan strains but not with that from Japan. R.T.L.

(133bd) The eggs of *Plagitura salamandra* contain mature miracidia which hatch in the digestive tract of the intermediate host, *Pseudosuccinea columella*. Experiments designed to reveal the factors essential for hatching showed that mature miracidia hatched in a range of concentrations of sodium chloride (buffered to pH 5.0 to pH 7.6) and of potassium chloride (buffered to pH 7.0 to pH 8.6). Hatching also occurred in phosphate buffer solutions of pH 7.0. In extracts of the intestinal tract of *P. columella*, motile miracidia hatched within 48 hours but miracidia hatched in 24 hours if sodium chloride was added to the extract. Aqueous extracts of the intestinal tracts of three other molluscan species liberated the mature miracidia only after sodium chloride had been added but none of the miracidia were motile. R.T.L.

(133be) *Ventridens ligera* is now added to the two known first intermediate hosts of *Panopistius pricei* as a result of laboratory experiments and the occurrence of natural infection in 3 out of 3,844 specimens of this land snail which were collected in the Ann Arbor area recorded. The cercariae are blunt-tailed, develop in sporocysts and are shed in 44 to 50 days after the snail is exposed to infection. R.T.L.

133—Journal of Parasitology (cont.)

- bf. POLLAK, J. K., 1954.—"Multiple reproductive organs in *Ascaris lumbricoides*." 40 (4), 480.
 bg. EHRENFORD, F. A., 1954.—"The life cycle of *Nematospiroides dubius* Baylis (Nematoda: Heligmosomidae)." 40 (4), 480-481.
 bh. EHRENFORD, F. A., 1954.—"A new effective anthelmintic for canine *Trichuris*." 40 (4), 481.
 bi. THATCHER, V. E., 1954.—"Some helminths parasitic in *Clemmys marmorata*." 40 (4), 481-482.
 bj. HALEY, A. J., 1954.—"The use of a surface active agent to facilitate the examination of intestinal contents for helminth parasites." 40 (4), 482.
 bk. VOGEL, M. & READ, C. P., 1954.—"A new record of the cestode *Infula burhini* Burt (Cyclophyllidae: Dioecocestidae) from Australia." 40 (4), 483.
 bl. EHRENFORD, F. A., 1954.—"Effects of dietary protein on the relationship between laboratory mice and the nematode *Nematospiroides dubius*." 40 (4), 486.

(133bf) During dissections of over 500 *Ascaris lumbricoides* var. *suum*, Pollak found one female with three genital tubes each complete with ovary, oviduct and uterus. Two of the uterine branches ramified normally but the third was joined to the base of one of the others. Similar instances have been reported by Monaco & Mizelle [for abstract see Helm. Abs., 22, No. 33u]. Their occurrence in different localities suggests that this condition is a variant from the normal type with two uteri. G.I.P.

(133bg) The various stages in the development of *Nematospiroides dubius* are as follows: the eggs hatch in about 26 hours but only in faeces which have been kept moist; the first ecdysis begins 48 hours after hatching but the skin is retained as a sheath for the infective larval stage which is reached in four to six days. The infective larva is unable to penetrate the host's skin but on ingestion it loses its sheath and within 24 to 48 hours penetrates the intestinal mucosa to reach the longitudinal muscles of the gut wall. Most of the larvae are in the second parasitic stage as pre-adults 96 hours after ingestion. Six to eight days after the third moult the worms regain the intestinal lumen. Ova first appear in the faeces nine days after infection and continue to do so for eight months. The whole cycle takes about 15 days. *Peromyscus maniculatus gambelii* in California is a new host for *Nematospiroides dubius*. R.T.L.

(133bh) This brief note states that the compound 3-methyl-1-pentyn-3-yl sodium phthalate has significant and specific action against *Trichuris* when given orally to dogs. G.I.P.

(133bi) Of the seven species found in 64 *Clemmys marmorata*, from the Rogue River and Willamette River drainages in Oregon, *Polystomoides coronatus*, *Neopolystoma orbiculare*, *Telorchis corti*, *Ophioxenos dienteros*, *Spirooura affine* and *Spiroxys contortus* are new for this host. Immunity to *Telorchis corti* was correlated with the age or the size of the turtles. G.I.P.

(133bj) A more accurate method for the quantitative determination of *Nippostrongylus muris* in the intestine of rats is made possible by the use of 4 c.c. to 5 c.c. of a 25% aqueous solution of a non-ionic surface active agent, Tween 80, instead of water. The mucosa and contents of more than 2 or 3 inches of intestine can now be broken up in a shorter time. The worms remain viable and are uninjured. G.I.P.

(133bk) Two cestodes collected in Australia by the late Dr. N. A. Cobb from the small intestine of a white-headed stilt (*Himantopus himantopus leucocephalus*) have been identified as *Infula burhini*, originally described by Burt from Ceylon. This is a new locality record. R.T.L.

(133bl) The growth curves and blood cellular changes in laboratory mice showed that a 10% protein diet protected them from the effects of a *Nematospiroides dubius* infection. On 10% protein diet there was a temporary loss of weight and more severe blood changes. In older mice the 10% level restricted adult worms to a more anterior location in the intestine than the 20% diet. The effect of the worms on growth and on the cellular elements of the blood occurred after the pre-patent period and at the onset of the production of ova. R.T.L.

134—Journal of Pharmacy and Pharmacology. London.

- a. GARRATT, D. C. & PHIPERS, R. F., 1954.—“A note on the assay of ascaridole in castor oil solution.” **6** (1), 60–61.

135—Journal of the Philippine Medical Association.

- a. PESIGAN, T. P., GARCIA, E. G., BANZON, T. C., BELTRAN, A. M., SANTOS, A. T., ANOVER, M. & BASACA-SEVILLA, V., 1954.—“Further studies on intradermal test in schistosomiasis japonica.” **30** (1), 14–22.

(135a) Using an antigen prepared from adult schistosomes Pesigan and his co-workers have shown the intradermal test to be extremely useful in the detection of *Schistosoma japonicum* infection, especially in the initial screening tests during a mass survey. Of 1,051 persons with *S. japonicum* ova in the faeces 93.91% gave a positive reaction to the test. Other helminth infections did not appear to affect the reaction. Among 2,258 persons who had not been exposed to *S. japonicum* infection there were only 2.39% false positives. S.W.

136—Journal of the South African Veterinary Medical Association.

- a. MALHERBE, W. D., 1954.—“The chemotherapy of *Filaroides osleri* (Cobbold, 1879) infestation in dogs: a progress report.” **25** (2), 9–12.

(136a) Infection with *Filaroides osleri* in dogs in South Africa appears to be limited to the bull mastiff breed. Intravenous injections of anthiomaline or fouadin, for nine to twelve weeks in a weekly dose of about 5 ml. for an animal averaging from 30 kg. to 45 kg. in body-weight, has proved a successful, cheap and safe remedy. Quicker results were obtained when 10 mg. per kg. of hetrazan were given thrice daily by the mouth for a week in addition to a daily injection of not more than 1.5 ml. to 2.0 ml. of anthiomaline or fouadin and repeated, if necessary, after an interval of two to three weeks. With this combined course however the risk of toxicity was greater. R.T.L.

137—Journal of Tropical Medicine and Hygiene.

- a. MUIRHEAD-THOMSON, R. C., 1954.—“Differential biting habits of the vectors as a factor in the age distribution of mosquito-borne filariasis.” **57** (5), 107–112.
 b. SCHNEIDER, J., 1954.—“Intestinal schistosomiasis in the northern and eastern Transvaal, Union of South Africa.” **57** (5), 112–116.
 c. SCHWETZ, J., 1954.—“Reflections on the ‘problem’ of classification and nomenclature of molluscs, transmitters of schistosomes in Africa.” **57** (6), 125–131.
 d. SCHWETZ, J., 1954.—“On some Planorbidae shedding *Schistosoma cercariae*, found in the town of Ndola, Northern Rhodesia.” **57** (7), 153–155.
 e. LEURER, J., 1954.—“High eosinophilia in dracontiasis—report of case.” **57** (7), 155–157.

(137a) Muirhead-Thomson comments on the disparity in the incidence of microfilaraemia in children, especially very young children, and adults. He discusses the various theories which have been put forward to account for this problem and suggests that it might be explained by differential biting habits of the insect vectors, for recent work in Jamaica with *Anopheles albimanus*, in Trinidad with *A. aquasalis* and *A. bellator* and in Africa with *A. gambiae* has shown that these mosquitoes, three of which are vectors of *Wuchereria bancrofti*, tend to bite older children and adults to a greater extent than infants and very young children. He also comments upon the fact that the incidence of microfilaraemia in young children (under 5) is unusually high in some areas, e.g. in Travancore and the Maldives Islands where the vector is *Culex fatigans*. In Travancore the incidence of *W. malayi* in the under 5 group is very high (18.9%) and the principal vector there is the culicine genus *Mansonioides*. He suggests that this comparatively high incidence of microfilaraemia in children might also be explained by the different biting habits of the culicine vectors. J.J.C.B.

(137b) Schneider examined 110 Africans from northern and eastern Transvaal for intestinal schistosomiasis by the rectal biopsy technique and found schistosome eggs in 56 or 50.9%. These comprised 38.2% with *S. haematobium* and 32.7% with *S. mansoni*. In one

case the eggs of *S. bovis* were found. The factors influencing the distribution of the infections are briefly discussed.

J.J.C.B.

(137c) Schwetz discusses under various headings the problem of accurate determination of the names of molluscan hosts of African schistosomes with special reference to the planorbid snails and states with some emphasis his own views on the subject. He outlines his own system of nomenclature and classification which is based on the shell and on the habitats of the living snails. At the same time he emphasizes the importance of experimental breeding of different oecological "species" under similar conditions in the laboratory to observe possible changes in shell size and shape after several generations, and also of carrying out in Africa simultaneous research on schistosomiasis and conchology, namely *in loco* experiments on the infectivity of snails together with morphological studies of the shells.

J.J.C.B.

(137d) Schwetz reports that during a short visit to Northern Rhodesia he found *Physopsis* at Ndola and *Planorbis* at Twapia. Only a few of the specimens collected shed schistosome cercariae. These could not be specifically identified owing to the premature death of the experimentally infected mice.

R.T.L.

(137e) A transient and fluctuating eosinophilia reaching 64% was observed in a case of dracontiasis. The patient had come to Israel from San'a in the Yemen four years ago. He had received eight 5 ml. injections of foudadin as *Schistosoma mansoni* eggs had been found in his faeces.

R.T.L.

138—Klinische Wochenschrift.

- a. OELKERS, H. A. & OHNESORGE, G., 1954.—"Über die Herzgiftigkeit von Filixstoffen." 32 (9/10), 226-227.

139—Lancet.

- a. MACCARTHY, E., 1954.—"Infestation with *Trichocephalus dispar*. Ten cases in an Irish orthopaedic hospital." Year 1954, 1 (6809), 436.

(139a) Ten cases of infection with *Trichuris trichiura* and *Ascaris lumbricoides* from various counties of Ireland were successfully treated in a Dublin orthopaedic hospital with the proteolytic enzyme papain; the drug was given in an enteric-coated capsule (containing 0.5 gm.) or by a rectal drip of 15 gm. in 6 oz. water, preceded by magnesium sulphate.

R.T.L.

140—Landbouwwoorlichting.

- a. OOSTENBRINK, M., 1954.—"Een overzicht van de nematologie als onderdeel van de plantenziektenkunde." 11 (5), 215-226.

(140a) Oostenbrink gives a popular account of the more important plant-parasitic nematodes. After a general description of their morphology and life-history he deals briefly with the species of *Heterodera* attacking beet, peas, clover, oats, brassicas, potatoes and grasses; with root-knot eelworms, leaf and bud eelworms, species of *Diritylenchus* and *Pratylenchus*, and mentions finally certain ectoparasitic root-feeding species.

M.T.F.

141—Medical Journal of Malaya.

- a. AUDY, J. R. & HARRISON, J. L., 1954.—"Field tests of repellent M-1960 against leeches." 8 (3), 240-250.

(141a) Audy & Harrison have tested clothing impregnated with M-1960 (a mixture of equal parts of *n*-butylacetanilide, 2-butyl-2-ethyl-1,3 propanediol and benzyl benzoate with 10% Tween 80 as an emulsifier) as a protection against the land leeches, *Haemadipsa zeylanica* and *H. picta*, and the aquatic leech, *Hirudinaria manillensis*. Protection was almost complete at first and remained considerable after six cold washes; after six cold washes in soap and water the protection against *H. manillensis* was lost but against the land leeches remained considerable.

S.W.

142—Medicina Colonial. Madrid.

- a. MATILLA, V., APARICIO GARRIDO, J. & PRIETO LORENZO, A., 1954.—“Parásitos asociados al *Ancylostoma duodenale* en la huerta del Jarama (Madrid).” 23 (3), 209–211.
- b. GARCÍA SANZ, J. A., 1954.—“Ladrería o cisticercosis cutánea. Algunas consideraciones sobre la misma y exposición de un caso.” 23 (3), 223–232.
- c. PRIETO LORENZO, A., 1954.—“Orientaciones en la lucha contra los parasitismos intestinales humanos en España.” 23 (4), 327–383.

(142a) [The information given in this paper has already appeared elsewhere. For abstracts see *Helm. Abs.*, 20, No. 245a; 21, No. 451a.]

(142b) Many *Cysticercus cellulosae* were present in the subcutaneous tissue of the forearm, shoulder and chest of a woman in Spain. P.M.B.

(142c) Prieto Lorenzo reviews the climatic, social and economic factors which contribute to the widespread incidence of intestinal helminthiasis in Spain and outlines remedial measures. R.T.L.

143—Mikrokosmos.

- a. HIRSCHMANN, H., 1954.—“Zur Zucht und Untersuchungen von Fadenwürmern.” 43 (4), 85–87.

(143a) Hirschmann describes a simple method for collecting and maintaining cultures of saprophagous nematodes and gives a popular account of microscope technique for the examination of these worms. A.E.F.

144—Mitteilungen der Deutschen Landwirtschafts-Gesellschaft.

- a. GOFFART, H., 1954.—“Bodengesundheitsdienst und Nematodenforschung.” 69 (2), 34–35.

(144a) Goffart points out the value of taking soil samples for estimating the infestation of a field with *Heterodera* species. He describes how sampling should be carried out and gives a diagram of the type of soil sampler and sample container recommended. He indicates the kind of information which may be obtained from cyst counts and points out the necessity for taking into consideration the cyst contents, the time of year and the type of soil and previous cropping of the field sampled. M.T.F.

145—Mycopathologia et Mycologia Applicata.

- a. MEYL, A. H., 1954.—“Die Nematodenfauna höherer Pilze in Laub- und Nadelwäldern zwischen Braunschweig und dem Harz.” 7 (1/2), 1–80.

(145a) The nematodes associated with two Ascomycetes and 76 Basidiomycetes have been investigated by Meyl in an oecological survey. He found 102 different species covering a wide range of genera. Amongst these he describes six new species, viz., *Iotonchium cephalostrictum* n.sp., *I. mycophilum* n.sp., *Hexatylus brevicaudatus* n.sp., *H. dipapillatus* n.sp., *H. boettgeri* n.sp. and *H. macrospiculatus* n.sp. The species of *Iotonchium* differ from the descriptions by Goodey in 1953 [for abstract see *Helm. Abs.*, 22, No. 107g] in the apparent absence of a lobed head in the male (this is also true for *H. macrospiculatus*) and in the suggestion that the ovary begins in the region of the junction of oesophagus and intestine. The paper contains sections on methods used and on the habitats investigated. J.B.G.

146—Nachrichten des Naturwissenschaftlichen Museums der Stadt Aschaffenburg.

- a. HIRSCHMANN, W. & RÜHN, W., 1954.—“Milben und Fadenwürmer als Symphoristen und Parasiten des Buchdruckers (*Ips typographus*).” No. 43, pp. 41–50.

(146a) [This is a fuller account of a paper published in *Mikrokosmos*, 1953, 43, 7–10. For abstract see *Helm. Abs.*, 22, No. 378a.]

147—Nachrichtenblatt für den Deutschen Pflanzenschutzdienst. Berlin.

- a. KÄMPFE, L., 1954.—“Ein einfaches Labor-Prüfverfahren für Nematode.” 8 (1), 9-13.
- b. BUHR, H., 1954.—“Untersuchungen über den Kartoffelnematothen.” 8 (3), 45-48.

(147a) Kämpfe describes laboratory techniques for testing chemicals for their effects on cysts of *Heterodera schachtii*. Cysts to be soaked in the chemicals are placed in glass tubes 2.0 cm. to 2.5 cm. long and 0.6 cm. to 0.8 cm. in diameter, closed each end by muslin. Hatching tests are carried out in the same type of vessel, the larvae being washed out for counting. Other tests are carried out on eggs and larvae in a cavity slide or on cysts placed between filter papers moistened with the chemical being tested. For pot tests Kämpfe places cysts in small Perlon bags together with 1 c.c. of soil and buries them at various depths in pots of sterilized soil. The chemical is sprinkled on the surface of the soil and the bags removed at different times. Host plants may be grown in the same pots and indicate both the tolerance of the plant to the nematocide and the viability of the treated cysts. The changes seen in dead larvae which distinguish them from living are described and figured. M.T.F.

(147b) Buhr describes a method of examining soil samples for the presence of *Heterodera* cysts by means of a “paper strip method”. A round glass dish about 15 cm. to 20 cm. deep and 15 cm. in diameter with vertical sides has a strip of filter paper placed round the inside touching the bottom and reaching to within 1 cm. to 2 cm. of the upper rim, the ends of the paper overlapping. The dish is then two-thirds filled with water and the 100 gm. sample of air-dried, sieved soil is poured in through a funnel. It is stirred and the floating cysts collect on the filter paper strip which is easily removed and the cysts collected from it. Buhr says that this method uses less water than the Fenwick-can method and is much quicker. The results of tests are given showing that it is at least as accurate. To collect white or yellow cysts which do not float in water concentrated solutions of magnesium or zinc sulphate may be used instead. M.T.F.

148—Nature. London.

- a. GREMBERGEN, G. VAN, 1954.—“Haemoglobin in *Heterakis gallinae*.” [Correspondence.] 174 (4418), 35.
- b. BIRD, A. F., 1954.—“The cuticle of nematode larvae.” [Correspondence.] 174 (4425), 362.
- c. WILSON, P. A. G., 1954.—“Size of trichostrongyle infective larvae in ‘monobacterial’ culture.” [Correspondence.] 174 (4428), 520.
- d. SPEDDING, C. R. W., 1954.—“Production of worm-free lambs at pasture.” [Correspondence.] 174 (4430), 611.
- e. DAWES, B., 1954.—“Maintenance *in vitro* of *Fasciola hepatica*.” [Correspondence.] 174 (4431), 654-655.

(148a) Grembergen concludes from his observations made on adult *Heterakis gallinae* with a Beck-Hartridge reversion spectroscope that this nematode contains haemoglobin. As the absorption bands remained in the same position for 24 hours when washed nematodes were kept in an incubator at 37°C., and as adult *H. gallinae* feed on caecal contents, not host tissues or blood, he is of the opinion that this is an autochthonous pigment, although the absorption bands were in a very similar position to those of the host's blood. S.W.

(148b) The sheaths of infective nematode larvae contain water-soluble proteins. Nine amino acids were demonstrated in the sheaths from mixtures of third-stage larvae of *Desophagostomum*, *Ostertagia*, *Chabertia*, *Haemonchus* and *Trichostrongylus* and in pure samples of *Haemonchus contortus* larvae. These amino acids (in approximate order of amounts present) were proline, hydroxyproline, aspartic acid, cysteic acid, glutamic acid, alanine, leucine, glycine and valine. R.T.L.

(148c) When *Trichostrongylus reortaeformis* larvae were developed from eggs in various *Bacterium coli* cultures, there was a reduction in the normal size of the third-stage larvae as compared with that determined from larvae reared on monobacterial cultures in autoclaved

faeces. Wilson's tests showed that the larval size is not influenced by the experimental techniques used, except possibly by osmotic phenomena, and indicated the possibility of a non-living faecal contribution to the larval nutrition. G.I.P.

(148d) Spedding has shown that it is possible to raise on pastures lambs which are, for all practical purposes, worm-free. The pasture used was a newly sown ley following two successive corn crops and the ewes and young lambs were folded over it using movable fences. The animals did not remain for more than two days on any plot, and no area was grazed more than once. S.W.

(148e) Dawes has found that it is possible to maintain *Fasciola hepatica* in Hédon-Fleigz solution for up to twelve days (and possibly longer) in excellent condition at 37°C. This technique, which is described in detail, entails great cleanliness although no attempt has been made to obtain sterile cultures. The warm livers are kept in an insulated container until they reach the laboratory where the outside is swabbed with absolute alcohol and the livers then dissected with sterile instruments in a small dettol-sprayed chamber. S.W.

149—Naturwissenschaften. Berlin.

- a. WESSING, A., 1954.—"Beobachtungen über den Austritt von Chromatin in Plasma bei der Keimzellenreifung eines Nematoden." 41 (4), 95-96.
- b. SWART-FÜCHTBAUER, H., 1954.—"Ektoparasitische Nematoden als mögliche Ursache der Bodenmüdigkeit in Baumschulen." 41 (6), 148.

(149a) In the course of his study of the germ cells of *Rhabditis anomala* Wessing observed migration of chromatin from the nucleus into the plasma and back. This phenomenon, which had not previously been described, is discussed in this preliminary communication. A fuller account is to be published elsewhere. A.E.F.

(149b) Swart-Füchtbauer suggests that the "soil sickness" associated with the growth of young trees may be due to nematodes. She records the finding of nematodes (probably belonging to the genus *Anguillulina*) on the roots of apple, mountain ash and quince trees. A.E.F.

150—Nederlandsch Tijdschrift voor Geneeskunde.

- a. BEKIUS, H. J., 1954.—"Ascaris-infectie bij het kind." 98 (18), 1208-1212. [English summary p. 1212.]

(150a) In the province of Groningen *Ascaris lumbricoides* is common in poor country districts where human faeces is used on the gardens but is rare in the city of Groningen. R.T.J.

151—New Biology. London.

- a. MILES, H. & MILES, M., 1954.—"Root eelworms." No. 16, pp. 101-117.

(151a) Miles & Miles give a general and popular account of the root eelworms of the genus *Heterodera*, with special reference to *H. rostochiensis*, *H. schachtii*, *H. major*, *H. göttingiana* and *H. marioni*. Aspects covered are mainly host-range in relation to agricultural practice, life-history and methods of control. B.G.

152—New Zealand Veterinary Journal.

- a. WHITTEN, L. K., 1954.—"Observations on the incidence of *Ascaris lumbricoides* in New Zealand pigs." 2 (2), 37-40. [Discussion p. 40.]

(152a) Whitten reports on the incidence of *Ascaris lumbricoides* in pigs in New Zealand. He considers that the low figure of 0.1% of 60,000 pigs in the North Island, as compared with that of 10.1% of 1,832 pigs in the South Island, is probably due to the feeding of skim milk to pigs. This practice is particularly common in the North Island. G.I.

153—Ohio Journal of Science.

- a. KRUEGER, R. F., 1954.—“A survey of the helminth parasites of fishes from Van Buren Lake and Rocky Ford Creek.” 54 (4), 277-279.

(153a) Krueger lists 34 species of helminths collected from fish in Van Buren Lake and Rocky Ford Creek. These include 17 monogenetic trematodes, 7 digenetic trematodes (of which three are larval forms), 5 cestodes (including one larval form) and 4 nematodes. Immature nematodes of unknown species are listed as *Agamonema* sp. G.I.P.

154—Parasitica. Gembloux.

- a. BRANDE, J. VAN DEN, 1954.—“Aspecten van het onderzoek ter bestrijding van het aardappel-cystenaaltje.” 10 (1), 1-5. [French summary p. 5.]

(154a) For the control of potato root eelworm, van den Brande recommends the cultivation of an early potato variety, Eerstelingen. He finds that increased yields can be obtained in infested soil by the use of calcium cyanamide. He gives briefly the results of experiments with D-D mixture in which he found that it varied in efficiency from year to year. If soil moisture is suitable he believes it possible to achieve almost complete kill. Tests are going on to find the best conditions for its efficient use. M.T.F.

155—Phytopathology

- a. GRAHAM, T. W., 1954.—“The tobacco stunt nematode in South Carolina.” [Abstract of paper presented at the 1954 Annual Meeting of the Southern Division of the American Phytopathological Society, Dallas, Texas, February 1-3, 1954.] 44 (6), 332.
- b. SMITH, A. L., 1954.—“Resistance to Fusarium wilt and root-knot nematode in upland cotton varieties.” [Abstract of paper presented at the 1954 Annual Meeting of the Southern Division of the American Phytopathological Society, Dallas, Texas, February 1-3, 1954.] 44 (6), 333.
- c. WELLS, J. C., HANSON, C. H. & ALLISON, J. L., 1954.—“The reaction of sericea lespedeza to root-knot nematode species.” [Abstract of paper presented at the 1954 Annual Meeting of the Southern Division of the American Phytopathological Society, Dallas, Texas, February 1-3, 1954.] 44 (6), 333.
- d. CRITTENDEN, H. W., 1954.—“Factors associated with root-knot nematode resistance in soybeans.” [Abstract of paper presented at the 11th Annual Meeting of the Potomac Division of the American Phytopathological Society, Beltsville, Md., March 4-5, 1954.] 44 (7), 388.
- e. GOLDEN, A. M., 1954.—“Pathogenicity of a spiral nematode (*Helicotylenchus* sp.) attacking boxwood.” [Abstract of paper presented at the 11th Annual Meeting of the Potomac Division of the American Phytopathological Society, Beltsville, Md., March 4-5, 1954.] 44 (7), 389.
- f. SCHINDLER, A. F., 1954.—“Root galling associated with dagger nematode, *Xiphinema diversicaudatum* (Micoletsky, 1927) Thorne, 1939.” [Abstract of paper presented at the 11th Annual Meeting of the Potomac Division of the American Phytopathological Society, Beltsville, Md., March 4-5, 1954.] 44 (7), 389.
- g. FEDER, W. A., 1954.—“Laboratory evaluation of certain nematicidal materials.” 44 (8), 428-430.
- h. TARJAN, A. C., 1954.—“Therapy of nematode infections of plants with 3-p-chlorophenyl-5-methyl rhodanine.” 44 (8), 431-432.
- i. NEAL, D. C., 1954.—“The reniform nematode and its relationship to the incidence of fusarium wilt of cotton at Baton Rouge, Louisiana.” 44 (8), 447-450.
- j. CAMERON, J. W., BAINES, R. C. & CLARKE, O. F., 1954.—“Resistance of hybrid seedlings of the trifoliolate orange to infestation by the citrus nematode.” 44 (8), 456-458.

(155a) In eastern South Carolina, *Tylenchorhynchus claytoni* was found in 67% of the soil samples taken from tobacco fields. It was frequently present also in samples from cotton and maize fields. As an ectoparasite on tobacco plants it caused stunted top growth. The roots did not show definite lesions but became shrivelled and sparsely developed. Their growth was much retarded and their green-weight was lower than that of normal plants. R.T.L.

(155b) Twenty-five varieties of upland cotton were compared for yield, wilt resistance and root-knot resistance on untreated soil and on soil fumigated with Dowfume W85. The best combined resistance was given by Auburn 56 lines and H81-16 with resistance derived

from Cook 307 and other Cook parentage. Root-knot index and wilt percentage were positively correlated. This indicates that the root-knot nematode increases the susceptibility of the host plant in the later stages of development as well as providing openings for the entrance of the wilt organism and suggests that in breeding programmes emphasis should be placed on improving nematode resistance. R.T.L.

(155c) In tests on a wide range of types of *Lespedeza cuneata* for resistance to *Meloidogyne arenaria*, *M. hapla*, *M. javanica*, *M. incognita* and *M. incognita* var. *acrita*, certain selections were highly resistant to individual species and several were moderately resistant to all species but none were immune to all species. R.T.L.

(155d) The following morphological and physiological features of soya bean varieties are associated with their resistance to *Meloidogyne incognita* var. *acrita*: (i) long tapering roots penetrating deep into the soil and possessing a minimum of laterals; (ii) roots that become woody early; (iii) acceptable growth and yield in soils with low potassium content; (iv) seeds with lowest percentage of oil commercially acceptable. The variety Laredo showed the greatest resistance but in Delaware is suitable only for hay or a green manure crop. The commercial varieties (Blackhawk, Monroe and Anderson) have a high degree of resistance and are acceptable in Delaware for seed production. G.I.P.

(155e) An undescribed, ectoparasitic species of *Helicotylenchus* widely distributed in Maryland and the surrounding states is found associated consistently with boxwood plants. It causes a lack of vigour, excessive bronzing of the leaves and a generally unhealthy appearance during hot or dry weather. In experimental pot inoculations the build-up of the parasite population was rapid, increasing from 250 to 7,300 in eight months, but it did not persist indefinitely in soil alone. By stunting the root system and weakening the plant this nematode is an important factor in producing an unhealthy condition in many boxwood plantings. G.I.P.

(155f) The galling of roots of roses grown in green-houses in the northern U.S.A. is due to *Xiphinema diversicaudatum* and not to *Meloidogyne* spp. This galling causes a characteristic enlargement of the root tip and curling of the end of the root with an apparent necrosis and shrivelling of the proximal portion. Galls have also been produced experimentally on roots of seedlings of tomato, soya bean, okra, cucumber, balsam and peanut grown in soil infested with *X. diversicaudatum*. G.I.P.

(155g) Feder describes two methods for testing the action of the vapours of a number of organic phosphate insecticides on nematodes in small pieces of plant tissue. The chemicals tested included parathion (25% emulsifiable), demeton (32.1% emulsifiable diethoxythiophosphoric acid ester of 2(ethyl mercapto) ethanol), EPN (77% emulsifiable ethyl-p-nitrophenyl benzenethio-phosphonate), Shell 1836 (diethyl-l-chlorovinyl phosphate, technical grade), malathion (50.3% emulsifiable o-o-dimethyl dithiophosphate of diethyl mercapto succinate) and schradan (technical grade octa methylpyrophosphoramide). The test material was small pieces of Vanda orchid buds containing *Aphelenchoides besseyi* and of daffodil bulbs and leaves containing *Ditylenchus dipsaci*. These were exposed to the chemical vapours either in petri dishes at room temperatures or in sealed test tubes at constant temperatures. In the petri dishes, 1 ml. of the chemical was dropped on to a no. 5 Whatman filter paper and the plant material was exposed on a watch glass in the closed petri dish, while in the test tubes the plant material was supported on a loose cotton-wool plug above 1 ml. of the liquid and the tube was sealed with a rubber bung. After 48 hours exposure in both types of test the plant material was teased in water and 3 hours later the living and dead nematodes were counted. The percentage kill is shown to be proportional to the concentration of nematicide at constant temperature and exposure time. The LD 50 values of parathion, Shell 1836, demeton, EPN and malathion were found to be 1.0, 1.5, 3.0, 4.5 and 5.0 p.p.m. respectively. In this test weakly volatile nematicides such as schradan and sodium selenate do not show toxicity. This is a screening technique which cannot predict effective dosages for field use but can be used as a guide for field trials. M.T.F.

(155h) As promising results were given by 3-*p*-chlorophenyl-5-methyl rhodanine when tested as a contact nematicide and ovicide and as a soil drench against the root-knot nematode (*Meloidogyne incognita*) in tomatoes, further experiments were undertaken in which it was used as an aqueous emulsion applied to soil in which infested tomatoes were growing. When applied at the rate of 1 gm. of emulsion per sq. ft. to potted plants the number of females on the roots was reduced to less than half that in the controls: complete control resulted from a dose of 2 gm. per sq. ft. The chemical was ineffective when applied dry to the soil at 4 gm. per sq. ft. or as a leaf spray at the rate of 10,000 p.p.m. When clean tomato plants were transplanted to soil with which the powdered compound had been mixed at rates of 2.0, 1.0 and 0.5 gm. per sq. ft. of surface and subsequently inoculated with 5 root-knot egg masses, no infestation was found two months later on any but control plants. M.T.F.

(155i) Two varieties of cotton, Delfos 425-920 (highly wilt-resistant) and Half and Half (highly wilt-susceptible) were grown for 99 days in green-house flats, one containing soil naturally infested with *Rotylenchulus reniformis* and the wilt fungus, *Fusarium oxysporum* f. *vasinfectum*, the other containing similar soil which had been sterilized and reinfected with the wilt fungus only. In the naturally infested soil, which at the end of the experiment contained 4,370 reniform nematodes and 160 *Helicotylenchus* sp. per pint, the resistant cotton had 3.1% wilt infection and the susceptible 81.4%. In the sterilized wilt-inoculated soil, which had 30 reniform nematodes per pint of soil at the end of the experiment, the resistant cotton developed no wilt and the susceptible had only 10%. It is concluded that the presence of the reniform nematode is an important factor in wilt-resistance of cotton. A number of other cotton varieties have shown resistance in field trials to a combination of reniform nematode and fusarium wilt. Some of these are susceptible to wilt in the presence of root-knot nematodes. M.T.F.

(155j) Seedlings of *Poncirus trifoliata* and of hybrids between this species and five species of *Citrus* were tested for attack by *Tylenchulus semi-penetrans*. Of 846 *Poncirus* seedlings from three different sources none was more than slightly infested, while 64% of 166 seedlings of Standard sour orange were severely infested and only 8% were free or slightly infested. Hybrid seedlings derived from crosses between *Poncirus* and *Citrus aurantifolia*, *C. limon*, *C. paradisi*, *C. reticulata* and *C. sinensis* all showed 85% to 100% of plants with slight to no infestation. Several older *Poncirus* hybrid trees growing at the Citrus Experiment Station show moderate to severe infestation suggesting that the resistance shown by hybrid seedlings may not be maintained as the trees become older. M.T.F.

156—Plant Disease Reporter.

- a. HORNER, C. E. & JENSEN, H. J., 1954—"Nematodes associated with mints in Oregon." 38 (1), 39-41.
- b. TAYLOR, A. L. & GOLDEN, A. M., 1954—"Preliminary trials of D-D Hi-Sil as a soil fumigant." 38 (2), 63-64.
- c. SASSER, J. N. & NUSBAUM, C. J., 1954—"The use of vermiculite as a carrier for volatile, liquid fumigants to control nematodes." 38 (2), 65-67.

(156a) Horner & Jensen record finding *Meloidogyne hapla* on Scotch spearmint (*Mentha cardiaca*) in the field in Oregon. They tested the following additional species of *Mentha* with *Meloidogyne hapla* in the green-house and found all to be readily infested: *Mentha spicata* (common spearmint), *M. piperita* var. Mitcham (commercial peppermint), *M. piperita* var. *americana* (wild peppermint), *M. arvensis* var. *canadensis* (field mint), *M. pulegium* (pennyroyal) and 15 hybrids of *M. piperita* × *M. crispa*. *Paratylenchus macrophallus* was observed in all stages of development in stems and underground buds of *M. piperita* in the field and *Longidorus* sp. was associated with extensive root stunting and die-back in many of the older mint-growing areas of western Oregon. *Aphelenchoides parietinus* and other *Aphelenchoides* species were found in considerable numbers around the apical meristems and young leaves of underground mint shoots. Attacks by root-knot nematodes on *M. cardiaca* and by *P. macrophallus* and *Longidorus* sp. on *M. piperita* have not previously been recorded. M.T.F.

(156b) Taylor & Golden have tested a mixture of Shell D-D (64% by weight) and a finely powdered silicon compound called "Hi-Sil". The mixture is a dark brown dry powder, easier to handle than D-D in liquid form. Tested at 0, 1, 2, 4 and 8 gm. per sq. ft. against root-knot in a glass-house soil, in holes 3 in. deep and 12 in. apart, and at the same rates in a field experiment in holes 6 in. deep, the results showed that, in terms of phytotoxic effects on squash plants sown at intervals as indicators, and in terms of nematocidal effects measured by a root-knot index assessment of infested roots, this powder was similar to an equivalent amount of D-D in liquid form, e.g. the kill was satisfactory at the 4 gm. rate, equivalent to about 24.7 gal. of D-D per acre.

B.G.P.

(156c) Sasser & Nusbaum have tested the exfoliated micaceous material called vermiculite as a carrier for ethylene dibromide, using 255 ml. of Dowfume W-85 per cu. ft. (10 lb.) of No. 4 grade vermiculite. The material was placed in the centre of the soil mass in 8 in. clay pots at rates corresponding to 0.7, 1.5, and 3 ml. of Dowfume W-85 per cu. ft. of soil infested with root-knot. The soil surface was sealed with water, and a tomato seedling was planted in each pot two weeks later and grown for 30 days. All treatments gave complete control. In a field experiment the material was applied at half the recommended EDB rates, by fertilizer distributor, 6-in. deep. Control was absent if the material was broadcast, poor if material and fertilizers were mixed and applied together, fair if the fertilizers were applied just before planting (after row fumigation), and good if fertilizers were applied at the time of row fumigation (but not mixed), as judged by the root-knot index of tobacco plants planted three weeks after fumigation.

B.G.P.

157—Poultry Science.

- a. RIEDEL, B. B., 1954.—"Tryptophane and its relationship to ascarid infections in New Hampshire chicks." 33 (1), 80-84.
- b. HANSEN, M. F., PERSAUD, B. R. B. & ACKERT, J. E., 1954.—"Effects of certain anthelmintics and an antibiotic on lumen and tissue phase larvae of *Ascaridia galli* (Schrunk)." 33 (1), 140-146.

(157a) After being fed with diets high and low in tryptophane, New Hampshire chicks were each given about 600 embryonated ova of *Ascaridia galli*. The numbers and lengths of the worms recovered at autopsy three weeks later indicated that tryptophane which was adequate to promote growth of the chicks did not induce a higher degree of resistance to the infection.

R.T.L.

(157b) In a study of their efficacy against the larvae of *Ascaridia galli* in experimentally infected chickens neither aureomycin nor any of four commercial anthelmintics which contained potassium antimony tartrate, nicotine alone, nicotine with phenothiazine, or nicotine with both phenothiazine and butynorate proved effective against the tissue phase of the parasites. Nicotine, unless combined with phenothiazine, was ineffective against the larvae of the lumen of the gut. Nicotine-phenothiazine mixtures hastened the death of elimination of the less vigorous lumen larvae. Potassium antimony tartrate removed the more vigorous larvae. Aureomycin given at the rate of 18 mg. per day for 11 days promoted the growth of the chicks while nicotine or potassium antimony tartrate significantly retarded their growth.

R.T.L.

158—Presse Médicale.

- a. VERGE & DUTEIL, G., 1954.—"Notes sur la trichinose." 62 (10), 208.

(158a) It is stated that trichinosis does not occur in France at the present time. The only outbreak hitherto recorded was at Crepy en Valois (Oise) in 1878 although in 1942 a German veterinary journal reported the discovery of a single instance of trichinosis in a pig at an abattoir in Paris.

R.T.L.

159—Proceedings of the Alumni Association, Malaya.

- a. COUGHLAN, R. F., 1954.—“Zoonoses with special reference to Malaya.” 7 (2), 122-130.

(159a) The diseases which are naturally transmitted between man and domesticated animals are briefly summarized. Several helminths are mentioned [but without any specific indication that they occur in Malaya].

R.T.L.

160—Proceedings of the Helminthological Society of Washington.

- a. MAYHEW, R. L., 1954.—“Studies on bovine gastro-intestinal parasites XVII. Feeding small amounts of phenothiazine during the prepatent period in pure infections of the nodular worm.” 21 (1), 10-14.
- b. JONES, M. F., 1954.—“*Enterobius vermicularis* infection in patients with poliomyelitis.” 21 (1), 15-17.
- c. COIL, W. H., 1954.—“Two new rhopalocercariae (Gorgoderinae) parasitic in Lake Erie mussels.” 21 (1), 17-29.
- d. GOLDBERG, A., 1954.—“Parasites of skunks in the Beltsville, Maryland, area.” 21 (1), 29-34.
- e. PENNER, L. R., HELMBOLDT, C. F. & GRISWOLD, A. L., 1954.—“*Eurytrema procyonis* in a raccoon from Connecticut.” 21 (1), 34-35.
- f. TIMM, R. W., 1954.—“An abnormality of *Oncholaimus marinus* (Nematoda: Oncholaiminae).” 21 (1), 36.

(160a) Nodular worm egg-production in the faeces of calves inoculated with moderate numbers of larvae (up to 50,000) was not affected by feeding 1.5 gm. of phenothiazine daily for 14 days after inoculation. Egg-production was however delayed, reduced and, in some cases, completely suppressed by feeding 1.5 gm. for 28 days or from the 14th to 28th day, but was not affected by feeding 0.5 gm. from the 15th to 28th day. After inoculation with large numbers of larvae (approximately 100,000), 1.5 gm. phenothiazine fed daily did not prevent symptoms of parasitism and death within 8 days of two calves, although a third showed no symptoms and egg-production was delayed.

L.M.C.

(160b) In 252 poliomyelitis patients the incidence of *Enterobius* infection was 20%, not markedly different from that in a similar age group of patients in hospital for other reasons. It was shown, however, that *Enterobius* eggs were disseminated at times when the virus could also have been present in the intestinal tract.

L.M.C.

(160c) Two apharyngeate gorgoderid cercariae are described and figured from mussels in Lake Erie. These are *Cercaria pyriformoides* n.sp. from *Lampsilis siliquioidea* and *C. anodontae* n.sp. from *Anodonta grandis*. *C. pyriformoides* is closely related to *C. pyriformis*: it has 11 pairs of penetration glands, two or three papillae on the posterior margin of the acetabulum and either six or seven papillae on the post-acetabular dorsum. *C. anodontae* has seven pairs of penetration glands and is the smallest rhopalocercaria hitherto described from North America. Relationships are discussed on the basis of morphology and a key to the rhopalocercariae of America is given.

L.M.C.

(160d) The helminths found at autopsy on 14 skunks, *Mephitis mephitis nigra*, from the vicinity of Beltsville, Maryland are tabulated. The list includes *Gongylonema pulchrum*, two species of *Dipetalonema* (not identified) and a species of *Capillaria*. None of these has hitherto been recorded for this host.

R.T.L.

(160e) *Eurytrema procyonis* was present in large numbers at an autopsy on a sick raccoon, *Procyon lotor*, caught by a professional trapper in western Connecticut. 2,407 worms were collected from approximately three-quarters of the pancreas yet the only major pathological changes were the greatly dilated intralobular ducts.

R.T.L.

(160f) A rare abnormality in marine nematodes is illustrated from a single female *Oncholaimus*. There were three distinct and fully developed lateral tubes of the demanian system opening behind the anus. The specimen conformed in other respects to *Oncholaimus marinus*.

R.T.L.

160—Proceedings of the Helminthological Society of Washington (cont.)

- g. LOWNSBERY, B. F. & LOWNSBERY, J. W., 1954.—"*Heterodera tabacum* new species, parasite of solanaceous plants in Connecticut." 21 (1), 42-47.
- h. SCHUURMANS STEKHOVEN, J. H., 1954.—"*Neorhabditis*, a new name for *Pararhabditis* Schuurmans Stekhoven." 21 (1), 47.
- i. BAER, J. G., 1954.—"The tapeworm genus *Wyominia* Scott, 1941." 21 (1), 48-52.
- j. OLSEN, O. W., 1954.—"Occurrence of the lungworm *Protostrongylus boughtoni* Goble and Dougherty, 1943 in snowshoe hares (*Lepus americanus bairdii*) in Colorado." 21 (1), 52.
- k. LIDER, L. A., 1954.—"Inheritance of resistance to a root-knot nematode (*Meloidogyne incognita* var. *acrita* Chitwood) in *Vitis* spp." 21 (1), 53-60.
- l. MARTIN, H. M., 1954.—"The occurrence of *Physaloptera rara* Hall and Wigdor 1918 in dogs in Pennsylvania." 21 (1), 60-61.
- m. ALLEN, R. W. & JACKSON, P. K., 1954.—"The domestic sheep a new host for *Cooperia bisonis*." 21 (1), 61.

(160g) *Heterodera tabacum* n.sp. from tobacco growing at Hazardville, Connecticut, matured on all the varieties of tobacco tested, on *Solanum nigrum* and on *Nicotiana rustica* but not on potato. *H. rostochiensis* did not mature on any of the tobacco varieties tested or on *Solanum nigrum* or *Nicotiana rustica*. While *Solanum dulcamara*, *S. integrifolium*, *S. rostratum* and *Lycopersicon esculentum* were susceptible to both species there were differences in the degree of susceptibility. *H. tabacum* closely resembles *H. rostochiensis* but differs in the male in that the tail is shorter and lacks a posterior protuberance, the distance from the base of the spear to the orifice of the dorsal oesophageal gland is shorter and the head is set off by a greater constriction: it differs in the female in that the lip region commonly has three prominent annules, and in that the cuticular punctations between the anus and vulva are usually indistinct but when visible are aligned parallel to the vulva-anal axis or show no alignment. The spherical cysts distinguish *H. tabacum* from *H. punctata*. The second larval stage has a mean length of 476μ as compared with 567μ in *H. leptonepia* and the larval dorsal oesophageal gland orifice averages 5.5μ behind the spear whereas it is 12μ in *H. leptonepia*. R.T.

(160h) As *Pararhabditis* Schuurmans Stekhoven, 1951 is preoccupied by *Pararhabditis* Baylis & Daubney, 1926 *Neorhabditis* is proposed for this homonym. R.T.

(160i) As the original diagnosis of *Wyominia tetoni* Scott was not found to conform with the anatomy as revealed by sections of the original material, Baer has given a more detailed account of this cestode, redefines the generic description and places the genus in the subfamily Thysanosominae. *Wyominia* differs from *Thysanosoma* in the position of the vagina which opens directly on to the dorsal surface on one side of the segment and on to the ventral surface on the other side, in the structure of the uterus which is a transverse tubular organ in the anterior third of the segment, and in the presence of a yolk gland. R.T.

(160j) Olsen records finding *Protostrongylus boughtoni* in the lungs of four *Lepus americanus bairdii* from the Fort Collins area of Colorado. The specimens differed from the original description by Gobel & Dougherty [for abstract see Helm. Abs. 12, No. 183m] in that the mouth was triangular instead of round. S.V.

(160k) Lider, working on the resistance of some species of *Vitis* to root-knot eelworm, has shown that there are a number of racial differences within *Meloidogyne incognita* var. *acrita*, especially in their ability to produce root-knot. *Vitis champini* appears to be heterozygous and *V. candicans* homozygous for a dominant gene conferring resistance. It appears likely that *V. champini* is a hybrid between *V. candicans* and *V. rupestris*. *V. vinifera* and *V. labrusca* are both homozygous recessive and therefore susceptible. S.V.

(160l) Martin records *Physaloptera rara* from dogs in Pennsylvania for the first time. S.V.

(160m) Specimens of *Cooperia bisonis*, collected for the first time from sheep, differed from the original description only in the length of the spicules, which were slightly longer. S.V.

160—Proceedings of the Helminthological Society of Washington (cont.)

- n. PENNER, L. R. & CHRISTIAN, J. A., 1954.—“The cattle nodular worm in Connecticut.” 21 (1), 62.
- o. ROHRBACHER, Jr., G. H. & EHRENFORD, F. A., 1954.—“*Biogastranema* new genus (Nematoda: Trichostrongylidae) from the California jackrabbit, *Lepus californicus californicus* Gray (Mammalia: Leporidae).” 21 (2), 63–67.
- p. NEWTON, W. L., 1954.—“Albinism in *Australorbis glabratus*.” 21 (2), 72–74.
- q. HERLICH, H. & PORTER, D. A., 1954.—“Experimental attempts to infect calves with *Neoscaris vitulorum*.” 21 (2), 75–77.
- r. SHORT, R. B., 1954.—“A new blood fluke, *Selachohemecus olsoni*, n.g., n.sp. (Aporocotylidae) from the sharp-nosed shark, *Scoliodon terra-novae*.” 21 (2), 78–82.
- s. CORT, W. W., AMEEL, D. J. & VAN DER WOUDE, A., 1954.—“Germinal development in the sporocysts of the blood flukes of turtles.” 21 (2), 85–96.

(160n) *Oesophagostomum radiatum* is becoming established in Connecticut. Cattle from a herd kept at the University of Connecticut, which had been reared only on food from the fields belonging to the University, were infected. S.W.

(160o) *Obeliscoides cuniculi*, the common stomach worm of rabbits, was not found in the California jackrabbit, *Lepus californicus californicus*, but two new species of a new genus were present. These are *Biogastranema leporis* n.g., n.sp. and *B. affinis* n.sp. *Biogastranema* n.g. is readily separated from *Citellinema*, *Citellinoides* and *Graphidium* by the presence of an accessory membrane in the bursa and the absence of an inflation of the cephalic cuticle. It has no gubernaculum and the female tail has no spike. There are prominent cervical papillae and the ovjectors are close to the vulva. The specific differences are not compared: *B. leporis* is 12.6 mm. in length and the spicules are $1,052\mu$ long whereas *B. affinis* is only 7.9 mm. in length and the spicules are 418μ long; the tail of the female is blunter in *B. affinis*, than in *B. leporis* the generic type. Specimens cleared better in the medium described by Clark & Morishita [*Science*, 1950, 112, 789–790] than in glycerine jelly after lactophenol but tend to become too clear after six months. R.T.L.

(160p) Albinism is apparently inherited in *Australorbis glabratus* as a simple Mendelian recessive. The transparency of the body enabled Newton to observe various developmental stages, including migration of the miracidia and movements of the sporocysts and cercariae, of *Schistosoma mansoni* in living snails. Further application of the use of albino snails in studies of relationships between parasite and host are discussed. S.W.

(160q) [An authors' abstract of this paper appeared in *J. Parasit.*, 1953 39 (4, Sect. 2), pp.33–34. For abstract see Helm Abs., 22, No. 222ch.]

(160r) Short records and figures a new trematode, *Selachohemecus olsoni* n.g., n.sp., parasitic in the heart of *Scoliodon terra-novae* from the coast of Florida. C-shaped spines differentiate *Selachohemecus olsoni* from all other Aporocotylidae. It has a common genital pore. There is only one oval testis. The four gut caeca are short. Previously recorded species of this family occur in bony fishes whereas *S. olsoni* is from an elasmobranch. G.I.P.

(160s) Cort *et al.* obtained *Spirorchis* eggs from naturally infected *Chrysemys picta*, cultured them and infected *Helisoma trivolvis* with the miracidia. The number of germ cells in the miracidia averaged twelve but in three-day-old mother sporocysts the germinal elements had increased to 25–40, some of which were already embryo daughter sporocysts. In 10–12 days the number increased to more than 300; from this time the embryos grew rapidly and the daughter sporocysts began to migrate to the digestive gland about 21 days after infection. Embryo daughter sporocysts contain 12–16 germinal cells and by the time they escape they contain 25–35 cercarial embryos in *Cercaria elephantis*. At this stage it became apparent that a second species was present, the daughter sporocysts containing a far larger number of cercarial embryos. At post-mortem of two of the turtles two types of adults were found though the second has not yet been identified or named. Germinal masses are not formed and the germ cells are scattered along the sporocyst wall and continue to produce the next generation for a considerable time after the first daughter sporocysts or cercariae have been liberated. S.W.

160—Proceedings of the Helminthological Society of Washington (cont.)

- t. CORT, W. W., AMEEL, D. J. & VAN DER WOUDE, A., 1954.—“Further studies on the germinal development in the sporocysts of a bird schistosome, *Trichobilharzia stagnicolae* (Talbot 1936).” 21 (2), 97–106.
- u. YOUNG, R. T., 1954.—“Cestodes of sharks and rays in southern California.” 21 (2), 106–112.
- v. YOUNG, R. T., 1954.—“A note on the life cycle of *Lacistorhynchus tenuis* (Van Beneden, 1858), a cestode of the leopard shark.” 21 (2), 112.
- w. BOSHER, J. E. & McKEEN, W. E., 1954.—“Lyophilization and low temperature studies with the bulb and stem nematode *Ditylenchus dipsaci* (Kühn 1858) Filipjev.” 21 (2), 113–117.
- x. FISCHTHAL, J. H., 1954.—“*Bialovarium nocomis* Fischthal, 1953 (Cestoda: Caryophyllaeidae) from the hornyhead chub, *Nocomis biguttatus* (Kirtland).” 21 (2), 117–120.
- y. HERLICH, H. & STEWART, T. B., 1954.—“Transmission of cattle nematodes to sheep.” 21 (2), 121–123.

(160t) Continuing their observations on *Trichobilharzia stagnicolae*, Cort *et al.* have studied the sporocysts in experimental infections of *Stagnicola emarginata angulata*. In the miracidia the germ cells numbered from 21 to 30 and in the four-day-old mother sporocysts they had increased to about 60 germinal elements of which half were small embryos. Daughter sporocysts began to migrate to the digestive gland by about the 8th to 10th day and mature cercariae were liberated in about 21 days. No germinal masses were developed. The size of the snail hosts appeared to affect the size of the sporocysts and in young snails the germinal cells of the sporocysts were very crowded. S.W.

(160u) Young reports 18 cestode species from southern California, most of which occur in new hosts and localities. Three are new, viz., (i) *Echeneibothrium multorchidum* n.sp. from *Urobatis halleri* which is distinguished principally by the presence of 30 to 45 anterior-posteriorly flattened testes; (ii) *Anthobothrium oligorchidum* n.sp. from *U. halleri* which has 12 testes in the anterior two-thirds of the segment; (iii) *A. parviuncinatum* n.sp. from *U. halleri* and *Gymnura marmorata* (with larvae in *Hemigrapsus* sp.) which is characterized by the small size of the hooks, the few testes, which number 12 to 14, and the numerous segments. G.I.P.

(160v) Tetrarhynchid plerocercoids from *Cymatogaster aggregata*, when fed to five new-born *Triakis semifasciata*, gave rise to immature tetrarhynchs considered by Young to be *Lacistorhynchus tenuis* (Van Beneden, 1858). This cestode has not been reported previously in this host or from the Pacific. G.I.P.

(160w) A large percentage of pre-adult larvae of *Ditylenchus dipsaci* survived freezing at -80°C . for 20 minutes when in the dry state as “wool” or, when moistened with beef serum or with a concentrated sucrose solution followed by vacuum dehydration and storage *in vacuo*, for 28 days. Freezing in water killed them. It is suggested that lyophilization could be used as a technique for the study of some phases of nematode biology and the preservation of certain types of nematodes in the living state. G.I.P.

(160x) Fischthal now figures and gives a more detailed description of *Bialovarium nocomis* n.g., n.sp. from *Nocomis biguttatus* in Wisconsin, which was named and briefly described in *J. Parasit.*, 39, (4, Sect. 2), Suppl. p.24. *Bialovarium* differs from other Caryophyllaeidae in having a V-shaped ovary. Further characters which distinguish it from other genera are: (i) the scolex is not distinct from the neck, (ii) the cirrus opens into the utero-vaginal canal before it reaches the genital atrium, (iii) the uterine coils extend only to the lateral margin of the cirrus sac, and (iv) the absence of a caudal vesicle and embryonic hooks. G.I.P.

(160y) The larval stages of *Ostertagia ostertagi* and *Oesophagostomum radiatum* from cattle were able to survive for short periods in sheep although they are not normally found as adults in sheep. *Oesophagostomum radiatum* larvae penetrated the tissues and the resulting gross pathology was similar to that found in cattle. It is suggested that only fresh infective larvae are able to infect and maintain themselves in an abnormal host and that this accounts for the complete absence of adult cattle parasites from one of the three sheep experimentally exposed to infection. G.I.P.

160—Proceedings of the Helminthological Society of Washington (cont.)

- z. THORSON, R. E. & JORDAN, E. M., 1954.—“A pseudophyllidean tapeworm from a dog in southeastern United States.” **21** (2), 123-124.

(160z) Pseudophyllidean eggs, $61\mu \times 37\mu$ in size, resembling those of *Diphylobothrium latum* but with more pointed ends, were found during a faecal examination of a dog in Alabama. Following treatment, a tapeworm without gravid segments was recovered and identified as *Spirometra mansonioides*.
G.I.P.

161—Proceedings of the Linnean Society of London.

- a. KERSHAW, W. E., 1954.—“Filarial parasites of man.” **165** (1), 66-68.

(161a) Because they have little or no free-living phase in the life-cycle the filariae are protected from changes in the external environment; consequently their distribution is less directly connected with that of plants in the different vegetative zones than is the distribution of other animal species. Kershaw illustrates, by reference to the work carried out by Gordon and co-workers on *Loa loa* and *Acanthocheilonema persans* in man in West Africa, the different situations which arise when one species has a vector which may find a suitable habitat in a variety of vegetative zones, and another has a range of several different vectors.
S.W.

162—Proceedings of the Royal Society of Queensland.

- a. MACKERRAS, M. J., 1954.—“Two new species of *Dipetalonema* (Nematoda, Filarioidea) from Australian marsupials.” Year 1952, **64**, 51-56.

(162a) Mackerras describes and figures two new filariid species from south Queensland. *Dipetalonema johnstoni* n.sp., from the subcutaneous tissue of the anterior abdominal wall of *Isodon obesulus* and *Perameles nasuta*, has four terminal digitations at the tail tip, a character not present in any other species of this genus. *D. thylogali* n.sp., from the peritoneal and pleural cavities of *Thylogale wilcoxi*, is distinguished from *D. robertsi* by its smaller size, the position of the vulva which is 2.8 mm. from the anterior end, and the greater difference in size of the two spicules, the left being four times greater than the right.
G.I.P.

163—Proceedings of the Zoological Society of London.

- a. WRIGHT, C. A., 1954.—“Trematodes of the genus *Renicola* from birds in British zoos, with descriptions of two new species.” **124** (1), 51-61.
b. MANN, K. H., 1954.—“The anatomy of the horse leech, *Haemopsis sanguisuga* (L.) with particular reference to the excretory system.” **124** (1), 69-88.
c. CROFTON, H. D. & FRASER, P. G., 1954.—“The mode of infection of the hake, *Merluccius merluccius* (L.) by the trematode *Bucephalopsis gracilescens* (Rud.).” **124** (1), 105-109.

(163a) Of five species of *Renicola* collected by the author from the kidneys of birds in British zoological gardens, two only are identified. These are described as new. *Renicola pelecani* n.sp. from *Pelecanus onocrotalus* and *P. phillipensis* is recognized by its spindle-shaped body and well developed oesophagus. *R. sloanei* n.sp. from *Pygoscelis antarctica*, *Eudyptes chrysolophus* and *Uria aalge* is distinguished by the distribution of the vitelline glands which are in a single row of extra-caecal follicles from the beginning of the second fifth to the beginning of the last quarter of the body length. It is nearly related to *R. umigarasu* and may be *Dollfus' renicola* sp. from *Mergulus alle*.
R.T.L.

(163b) In this description of the anatomy of *Haemopsis sanguisuga*, the limits of the segments are defined by the distribution of the peripheral nerves, not on the relations of annulation and segmentation. The presence in the crop of only one pair of lateral diverticula may be correlated with the leech's macrophagous habits. The inner ends of the nephridial bulbs have lost their connection with the ciliated organ which manufactures coelomic corpuscles and has no excretory function.
R.T.L.

(163c) The encysted metacercariae of *Bucephalopsis gracilescens* which are found on the brain, the cranial nerves, and the spinal nerves in the tail region of *Merluccius merluccius* enter through the external pores of the lateral line canal. R.T.L.

164—Progrès Agricole et Viticole.

- a. BOUBALS, D., 1954.—“Les nématodes parasites de la vigne. Essais de lutte effectués en 1952-1953.” 71e Année, 141 (12/13), 173-182; (14/15), 204-208.

(164a) Boubals gives a general account of the occurrence and symptoms of root-knot nematode on vines in France and makes observations on resistance and susceptibility of the species of *Vitis*. In some vineyards the nematode is indigenous on weeds (e.g. *Solanum nigrum*), in others a heavy infestation has been built up on susceptible varieties of vine. Experiments for control with D-D mixture were carried out in pots and in the field. When applied at 360 kg. per hectare to growing plants in the field 65% of the vines were killed but the nematodes were not completely destroyed. When the soil was treated at 420 kg. per hectare after the removal of infested plants, and replanted 15 days later without aeration, the nematodes were not all killed. A number of stocks were tested both in pots and in the field for resistance to root-knot. The following are recommended as they showed only very slight or no galling: SO⁴, 5 BB, 8 B, 4010 Castel, 99 R, 1616 C and 44-53 M. M.T.F.

165—Progresso Veterinario. Torino.

- a. AJMERITO, G., 1954.—“La terapia della tricocefalosi canina.” 9 (3), 103, 105-106, 108.

(165a) Ajmerito reviews previous work on the use of various anthelmintics against trichuriasis in dogs. He finds thymol to be the most satisfactory and recommends that 2 gm. should be given orally by stomach sound and 5 gm. through the rectum simultaneously. In the 25 dogs which he treated, three treatments at intervals of five to six days gave the best results. Larger doses produced severe irritation of the rectal mucosa and a number of other undesirable side effects. S.W.

166—Publicaciones del Instituto de Biología Aplicada. Barcelona.

- a. GADEA, E., 1954.—“Nematodos libres terrestres de la isla de Cerdeña.” 16, 31-47. [English summary p. 46.]
b. GADEA, E., 1954.—“Nota sobre algunos nematodos muscícolas de San Marino.” 16, 49-51. [English summary p. 51.]

(166a) Eleven samples of soil and moss collected in Sardinia contained 29 species of free-living nematodes. None were new species but all are new to Sardinia. Their relative frequencies are shown in a table. R.T.L.

(166b) Brief notes are given of the six species of free-living nematodes found living in moss at San Marino. The dominant form was *Dorylaimus carteri*. All are common in Europe. R.T.L.

167—Report of the Bilharzia Snail Control Section, Ministry of Health, Egypt.

- a. EGYPT, MINISTRY OF PUBLIC HEALTH, 1954.—“Annual report.” 9th & 10th (1950 & 1951), 75 pp.

168—Revista de Biología Tropical. Universidad de Costa Rica.

- a. RUIZ, A. & LIZANO, C., 1954.—“Parásitos intestinales en niños. Estudio comparativo de los métodos diagnósticos usados.” 2 (1), 29-36. [English summary pp. 35-36.]
b. LIESKE, H., 1954.—“Filariasis en Puerto Limón, Costa Rica.” 2 (1), 37-43. [English & German summaries pp. 42-43.]

(168b) Out of 137 persons examined from 25 houses in one city block in the Jamaica Town district of Puerto Limón, 21 showed microfilariae of *Wuchereria bancrofti*; the numbers

of microfilariae fluctuated between 1 and 289 per 20 cu. mm. of blood. Five of these showed insignificant swellings of the inguinal glands and one had a slight oedema of the foot. The rest had no pathological signs. *Culex fatigans* is the dominant species and an important transmitter of filariasis in Jamaica Town. G.I.P.

69—Revista Brasileira de Biologia.

- a. MACHADO FILHO, D. A., 1954.—“Uma nova espécie do gênero *Neoechinorhynchus* (Hamann) (Neoechinorhynchidae, Acanthocephala).” 14 (1), 55–57.
- b. WRIGHT, C. A., 1954.—“Trematodes of the genus *Renicola* from the kidneys of birds in Brazil.” 14 (1), 61–64.

(169a) *Neoechinorhynchus macronucleatus* n.sp. from *Lycengraulis* sp. in the Brazilian State of Espírito Santo is described. It is differentiated from related species by the subcuticular nuclei which form projections on the external surface and on the wall of the body cavity and measure 0.05 mm. \times 0.02 mm., and also by the hooks which are arranged in three rows of six each. The hooks of the apical row are large in proportion to those of the other two rows and have pronounced roots. The distance separating the apical and median rows is markedly greater than that separating the basal and median rows. P.M.B.

(169b) The presence of species of *Renicola* in the New World is recorded for the first time. Three [not identified] were present in *Larus dominicanus*, *Poecilonetta bahamensis* and *Gallinula leucogaster*. The fourth species named *R. cruzi* n.sp. was found in *Sterna maxima* at Ilha dos Languinhos and Itanhaem and *S. hirundinacea* at Itanhaem. It is distinguished from *R. lari* by its smaller body (0.87 mm. to 1.69 mm. \times 0.29 mm. to 0.73 mm.) and by its smaller egg (0.34 mm. to 0.042 mm. \times 0.017 mm. to 0.021 mm.). R.T.L.

70—Rivista di Parassitologia.

- a. LAGRANGE, E., 1954.—“Le sexe des cercaires de *Schistosoma mansoni*.” 15 (2), 81–84. [English & Italian summaries p. 84.]
- b. LAGRANGE, E., 1954.—“Recherches expérimentales sur *Uncinaria stenocephala*, Railliet, 1884.” 15 (3), 151–159. [English & Italian summaries pp. 158–159.]

(170a) Lagrange reports on his work, which has extended over a number of years, with two strains of *Schistosoma mansoni*. From experimental infections of planorbids and mice he concludes that the first strain is incapable of producing cercariae of both sexes in a single snail, but that the second strain does produce both male and female cercariae within one snail. Both strains of *S. mansoni* have now been lost. S.W.

(170b) In Belgium, 23% of the stray dogs are infected with *Uncinaria stenocephala*. Even heavy infections are only mildly pathogenic. Dogs kept for four months in captivity lose most of their parasites without treatment. The ova can survive for a long time at -3°C . and a few may hatch. 125 different insecticides, fungicides and herbicides were tested; the larvae were killed in 24 hours by E.605, Selor D, Rotenone, Naphthol B and lead arsenate in dilutions 1:1,000, in less than 24 hours by santonin at 1:2,000, gentian violet and sodium hypochlorite at 1:5,000 and technical nicotine at 1:10,000, and in three to four hours by Lugol solution at 1:10,000 at 20°C . In cultures, groups of two to seven larvae became entangled by their tails and remained in this state for a long time. R.T.L.

71—Speculum.

- a. KOUTZ, F. R., 1954.—“Sheep parasite control program in Ohio.” 7 (3), 19, 20, 21, 51. [Reprint.]

(171a) Koutz lists the nematode parasites which have been reported from sheep in Ohio. With the use of phenothiazine and control measures parasitism is no longer the main problem. The best plan of bringing about almost complete eradication of gastro-intestinal

helminths in Ohio is to give treatment four times yearly, provide continual access to phenothiazine-salt mixture and to rotate the sheep periodically on clean pastures. It is pointed out that lambs that would ordinarily bring a premium price are rejected by the Kosher trade even if one oesophagostome nodule is present in the intestinal wall. R.T.L.

172—Tierzüchter.

- a. PFIZENMAIER, G., 1954.—“Wurmbefall als Ursache des Ferkelsterbens.” 6 (5), 113–115.

173—Tijdschrift voor Diergeneeskunde.

- a. DORSMAN, W., 1954.—“Het faecesonderzoek als hulpmiddel voor de diagnose van parasitaire gastro-enteritis bij runderen en schapen en van strongylidosis bij paarden.” 79 (66) 203–215. [English, French & German summaries p. 214.]

(173a) Dorsman underlines the importance of faecal examination in the diagnosis of trichostrongyle infections in cattle and sheep and of strongylosis in horses. He briefly describes techniques and goes on to list factors which may affect the value of such examinations. These are: (i) presence of large numbers of larvae or immature worms; (ii) age and resistance of the host; (iii) fluctuations in egg production; and (iv) the effect of anthelmintics. Examination should be repeated several times over a period. Dorsman concludes with advice on collecting specimens for despatch to parasitological laboratories. A.E.L.

174—Tijdschrift over Plantenziekten.

- a. LAAN, P. A. VAN DER, 1954.—“Nader onderzoek over het aaltjesvangende amoeboïde organisme *Theratomyxa weberi* Zwillenberg.” 60 (3), 139–145. [English summary pp. 144–145.]
 b. OOSTENBRINK, M. & OUDEN, H. DEN, 1954.—“De structuur van de kegeltop als taxonomisch kenmerk bij *Heterodera*-soorten met citroenvormige cysten.” 60 (3), 146–151. [English summary p. 151.]
 c. BIJLOO, J. D., 1954.—“Enige proeven ter bestrijding van cysten van *Heterodera rostochiensis* tussen de wortels van *Convolvulus*-bloedkiemen.” 60 (4), 199–202. [English summary p. 202.]

(174a) The amoeboid organism *Theratomyxa weberi* Zwillenberg, 1953 destroys species of *Heterodera*, *Meloidogyne*, *Pratylenchus*, *Rhabditis* and *Hemicycliophora* and, sometimes *Ditylenchus dipsaci* but mainly the small larvae. *Mononchus*, *Dorylaimus* and other larger forms of nematodes are not attacked. Non-sterile cultures are easy to maintain if kept under water with the temperature maintained from 10°C. to 15°C. and no light admitted. Larvae of *Heterodera rostochiensis* are given weekly as food. Pot experiments indicate that owing to its great susceptibility to drying, its non-specificity for its prey and its slow rate of spread the possibility of utilizing *Theratomyxa* as a practical measure of biological control is probably slight. R.T.L.

(174b) The structure of the vulva cone of the lemon-shaped cysts of species of *Heterodera* is of taxonomic value. In *H. avenae* (= *H. major*) the transparent lip tops of the cone are narrow and have a very short touching line forming together the shape of the figure 8. The vulvar split is extremely short and this probably prevents the deposition of eggs in a gelatinous egg-sac which is a normal feature in other lemon-shaped species. These characters can be usefully used to differentiate *H. avenae* in mixed populations. In *H. schachtii* the transparent patches on the lip tops are smaller than in *H. trifolii* and the average length of the patches is 32.1 μ . In *H. trifolii* it is 45.6 μ . According to the statistics presented these two species can be distinguished accordingly as the average length of the patches in five specimens of a population is below or above 38.7 μ . R.T.L.

(174c) In order to find a means of killing *Heterodera rostochiensis* cysts adhering to lily-of-the-valley pips, small bags of cysts were attached to the pips which were then dipped in various chemicals. Amongst the chemicals tested were Aaventa (an organic mercury compound) at concentrations of 0.5%, 1%, 2% and 4% for 30 minutes, one, and two hours at 15°C., mercuric chloride (0.002%, 0.0075% and 0.025%), α -chloro-acetamide (from 0.02%

0.25%) and allyl isothiocyanate (0.002%, 0.0075% and 0.025%) all followed by storage at low freezing point either from December until the end of March or from January until the end of April. The lily-of-the-valley pips were then planted and hatching tests were carried out on the nematode cysts. In none of the treatments which killed appreciable numbers of the nematodes did the plants escape serious injury.

M.T.F.

5—Tomato and Cucumber Marketing Board Journal. London.

- a. FENEMORE, P. G., 1954.—“Root knot eelworm.” 3 (1), 15–17.

6—Transactions of the American Microscopical Society.

- a. SCHILLER, E. L., 1954.—“Studies on the helminth fauna of Alaska. XVIII. Cestode parasites in young anseriformes on the Yukon delta nesting grounds.” 73 (2), 194–201.
 b. SINGH, K. S., 1954.—“Some trematodes collected in India.” 73 (2), 202–210.
 c. FISCHTHAL, J. H., 1954.—“*Cercaria tiogae* Fischthal, 1953, a rhopalocercous form from the clam, *Alasmidonta varicosa* (Lamarck).” 73 (2), 210–215.
 d. HUGGHINS, E. J., 1954.—“Life history of a strigeid trematode, *Hysteromorpha triloba* (Rudolphi, 1819) Lutz, 1931. II. Sporocyst through adult.” 73 (3), 221–236.
 e. OLSEN, L. S., 1954.—“A new species of *Camallanus* (Nematoda) from a Fijian marine fish.” 73 (3), 258–260.
 f. HOFFMAN, G. L., 1954.—“Polyvinyl alcohol-fixative-adhesive for small helminths and protozoa.” 73 (3), 328–329.

(176a) During a study of the identity, prevalence and effect of helminths in very young anseriform birds on the Yukon delta nesting grounds, Schiller found *Hymenolepis yukonensis* sp. in the spectacled eider, *Arctonetta fischeri*. The strobila measured about 60 mm. in length. The scolex had a diameter of 168 μ . The ten rostellar hooks were each 16 μ in length and the cirrus sac averaged 65 μ \times 32 μ . For the first time *H. barrowensis* Schiller is recorded. *Philacte canagica* and *Brania canadensis minima*. The scolex of *H. stoll* Brock is now described. *H. mastigopraedita* and *H. dafilae* are found to be synonymous with *H. stoll*. Except for the case of intestinal perforation associated with *H. lanceolata* in a young emperor goose, there is no clinical evidence that any of the cestode infections had affected the health of the young birds examined.

R.T.L.

(176b) Of the eight species of trematodes described from around Lucknow, two from the pintail duck, *Anas acuta*, are new. *Echinostoma microspina* n.sp. measures 7.84 mm. in length and differs from others having 47 collar spines in the size of the collar spines (0.207 mm.) and of the eggs (0.085–0.092 mm. \times 0.046–0.053 mm.). *Notocotylus solitaria* sp. is characterized chiefly by having three rows of glands with 14 in the middle row and 15 in each lateral row. *Anas acuta* is a new host for *Psilochasmus oxyurus* Creplin. *Diplodiscus shrai* and *D. amphichrus* var. *magnum* are considered to be synonyms of *D. amphichrus*. *Euurogenoides gastroporus* var. *equalis* is not accepted as a distinct variety and is therefore a synonym of *P. gastroporus*.

R.T.L.

(176c) The anatomy of *Cercaria tiogae* Fischthal, 1953 and its metacercaria are now described in detail with six figures. The cercaria has nine pairs of penetration glands and numerous cystogenous glands: the metacercaria has only eight pairs of penetration glands, the pair having been used up during the migration of the cercaria out of its host, and no cystogenous glands, these having been utilized for encystment.

R.T.L.

(176d) The mother sporocyst, daughter sporocyst and cercaria of *Hysteromorpha triloba* were obtained from experimentally infected *Gyralus hirsutus*. These larval stages are described and figured in detail. The metacercaria, which has already been described by Hughes in 1929 as *Diplostomulum corti* and by Ciurea in 1930 as *D. trilobum*, reaches maturity in experimental fish hosts in about 12 weeks. Eggs are produced 60 hours after the metacercariae attain the gut of the definitive hosts, *Phalacrocorax auritus auritus* and *P. olivaceus olivaceus*.

R.T.L.

(176e) *Camallanus carangis* n.sp. occurs in the marine fish "sagu" (*Caranx* sp.) in the Fiji Islands. It differs from nine other species of the genus by its larger size, body width, buccal capsule dimensions and spicule length "which are proportionally much different".

R.T.J.

(176f) Hoffman has modified Brooke & Goldman's polyvinyl-alcohol-fixative by replacing the Schaudin's mixture in the PVA-Schaudin's mixture by AFA fixative. To five cercariae placed in a drop of water on a slide two drops of PVA-AFA mixture were added, spread out and dried. Small nematodes and metacercariae, which are so easily lost, were fixed in a small Petri dish or beaker of hot 10% neutralized formaldehyde, transferred to a slide in a drop of fixative and one drop of PVA-AFA was added. The slide was then dried, stained and mounted. Small helminths can be fixed directly in PVA-AFA solution on a slide but are apt to contract or become distorted.

R.T.J.

177—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. MUIRHEAD-THOMSON, R. C., 1954.—"Factors determining the true reservoir of infection of *Plasmodium falciparum* and *Wuchereria bancrofti* in a West African village." 48 (3), 208-222.
- b. McFADZEAN, J. A., 1954.—"Filariasis in Gambia and Casamance, West Africa." 48 (3), 267-273.
- c. LEROUX, P. L. & ALVES, W., 1954.—"(1) *Physa* spp. should not be mistaken for *Bulinus truncatus*. (2) What is *Bulinus senegalensis* O. F. Mueller, 1781, of Amberson and Schwarz, 1953? (3) Amberson and Schwarz's (1953) identification of the African vectors of *Schistosoma mansoni*. (4) Malacological methods in the identification of vectors of mammalian schistosomiasis." [Demonstration.] 48 (4), 280-281. [Comment by E. Schwarz pp. 367-368.]
- d. LEROUX, P. L., 1954.—"*Schistosoma* spp. recovered experimentally, through snails and mice and hamsters from a human subject of urinary schistosomiasis." [Demonstration.] 48 (4), 283.
- e. ROBINSON, D. L., 1954.—"Routine method for the maintenance of *Schistosoma mansoni* in vitro." [Demonstration.] 48 (4), 283.
- f. GRIFFITHS, R. B., 1954.—"The production of skin sensitization in mice exposed to *Schistosoma mansoni*." [Demonstration.] 48 (4), 285.
- g. SILVERMAN, P. H., 1954.—"The hatching stimuli of taeniid ova and a description of secreting glands in the activated hexacanth embryo." [Demonstration.] 48 (4), 287.
- h. KERSHAW, W. E., DUKE, B. O. L. & BUDDEN, F. H., 1954.—"The distribution of the microfilariae of *Acanthocheilonema streptocerca* in the skin of man." [Demonstration.] 48 (4), 287.
- i. BROWNE, S. G., 1954.—"A contribution to the problem of the etiology of inguinal lymphadenopathy in the Belgian Congo." [Demonstration.] 48 (4), 288-289.
- j. NEWSOME, J., 1954.—"Clinical test of the miracid compound 27T51." 48 (4), 342-343.
- k. BAYER, F. A. H., 1954.—"Schistosome infection of snails in a dam traced to pollution with sewage." 48 (4), 347-350.
- l. MESSENT, J. J., 1954.—"Triostam in schistosomiasis." 48 (4), 351-352.

(177a) A survey of the village of Weiija about 12 miles north of Accra revealed a high rate of filarial infection in the *Anopheles gambiae* and *A. funestus* caught in the houses; during incubation the microfilariae reached infective stages in the head and proboscis and seemed likely to be *Wuchereria bancrofti*. The infective status of the population was tested by feeding batches of laboratory-bred *A. gambiae* on a wide range of subjects, irrespective of their blood parasite pictures. The infectivity of each individual was judged by the proportion of each batch which developed mature larvae in the head or proboscis. Most of the batches had a low infection rate. About one third of the adult population was found to be infective but most of them had a very low grade of infectivity. Where the number of microfilariae in 20 cu.mm. of blood was below 100 there was no obvious relation between its microfilarial density and the proportion of the mosquito batch which became infective: above 100 microfilariae in 20 cu.mm. increased microfilarial density tended to produce a high infection rate without any corresponding increase in the intensity of each infection. The degree of infectivity to *A. gambiae* remained fairly steady between 9 p.m. and 4 a.m. In *A. funestus* caught in the village the infection rate with immature larvae was almost equally as high as in *A. gambiae* but the infection rate with mature larvae was very much lower.

R.T.J.

(177b) A filariasis survey of the villages Kololi, Jiboroh and Mandinari in the Gambia, situated respectively on the coast, inland and near a river surrounded by swamp revealed the presence of *Wuchereria bancrofti* and *Acanthocheilonema perstans* only. The incidence of *W. bancrofti* was 38.3%, 19.2% and 25.9%, that of *A. perstans* was 10.2%, 68.6% and 12.9%. The number of cases of elephantiasis was extremely small. Yet at the village Elana in the neighbouring French territory where the incidence of *W. bancrofti* was 39.5% that of elephantiasis of the limbs was 5.6% and there were also many cases of hydrocele or elephantiasis of the scrotum. R.T.L.

(177c) LeRoux & Alves point out that a specimen illustrated by Amberson & Schwarz (1953) [for abstract see Helm. Abs. 22, No. 413a] as a laboratory-bred *Bulinus truncatus* is a *Physa* sp. and that the *B. senegalensis*, also figured, bears no resemblance to Adanson's types which are now in the Department of Malacology of the National Natural History Museum in Paris. They doubt if the grouping of *Biomphalaria* from various parts of Africa into the two subspecies *Biomphalaria alexandrina alexandrina* and *B. alexandrina pfeifferi* will meet with general acceptance. Schwarz, in reply to LeRoux & Alves, states that the specimen of *B. truncatus* illustrated is the variant described by Pallary as *Bulinus innesi* which is now regarded as a synonym of *B. truncatus*. R.T.L.

(177d) Schistosome eggs of two types were recovered from the urine of a patient who had presumably contracted the infection in Southern Rhodesia. The eggs were predominantly of a *haematobium* type but some, suggesting a probable co-infection with *Schistosoma mattheei* were not so markedly spindle-shaped as figured by Blackie in 1932 for this species, or as figured for *S. spindale* and *S. bovis* from man in South Africa. *Bulinus* (*Physopsis*) *africanus* from the Eastern Transvaal and *B. (P.) globosus* from Southern Rhodesia were highly susceptible to infection by the miracidia, and the female worms recovered from infected mice and hamsters were of two species, *S. haematobium* and *S. mattheei*, the former being under-developed especially with regard to the vitelline glands. LeRoux suggests that a hitherto undescribed schistosome, with a terminal-spined egg, parasitizing domesticated and wild ruminants in South Africa may be responsible for the identification of *S. spindale* and *S. bovis* infections in man, and that eggs found to be intermediate in shape and size between *S. mattheei* and the undescribed species may be due to interbreeding of these animal schistosomes. D.L.H.R.

(177e) An apparatus was demonstrated in which mature *Schistosoma mansoni* worms could be maintained and observed *in vitro* for long periods without removal of the worms. It consisted of a 250 ml. conical flask as a reservoir for the medium, a glass "filter" in the flask to prevent precipitates being withdrawn, a worm introduction chamber, an observation chamber and a withdrawal arm sealed by a rubber vaccine cap through which the medium can be withdrawn by hypodermic syringe. The advantages over the carrel flask method are that little attention is required for the maintenance of the worms, and the risk of contamination is reduced to a minimum. Eggs have been observed in schistosomes maintained in human serum. D.L.H.R.

(177f) To define the oedema caused by a challenging infection of cercariae of *Schistosoma mansoni* administered to mice previously exposed to the same species of cercariae at closely spaced intervals, a 0.5% trypan blue solution at a dosage rate of 5 ml. per kg. body-weight was injected intravenously immediately before the challenge exposure. The dye appeared first in discrete areas followed by extensive accumulation in areas up to 3 mm. in diameter within 10-30 minutes. Histological examination of the skin showed intense cellular infiltration around larvae in the dermis and marked serous exudation with leucocytic infiltration of the epidermis. In control mice undergoing initial infection dye accumulation was so small as to be barely visible. D.L.H.R.

(177g) Silverman demonstrated that a larger percentage of eggs of *Taenia saginata* and *T. pisiformis* would hatch *in vitro* if bile or bile salt were present in the artificial intestinal

juice. In the case of *T. pisiformis* pre-treatment with acid-pepsin was unnecessary. Once activated the hexacanth embryo tears its way through the onchospherical membrane and the bilobed secreting gland is visible, the ducts of which open at the base of the hooks. In sectioned material, two distinct eosinophilic nuclei were seen to be associated with the gland which is pyroninophilic and has also stained with haematoxylin.

D.L.H.R.A.

(177h) In contrast to the microfilariae of *Onchocerca volvulus*, which were found in large numbers in the calves and ankles and were few or absent in the trunk, shoulders and arms of man in the Cameroons, those of *Acanthocheilonema streptocerca* occurred in much smaller numbers, were more numerous in the shoulders than in the trunk, and were few or absent in the extremities. The concentration was estimated by counting the number of microfilariae issuing in a wet film from a weighed skin snip.

D.L.H.R.A.

(177i) 71 out of 148 males and 14 out of 80 adult females in the Belgian Congo were found to have more than minimal degrees of inguinal lymphadenopathy. *Wuchereria bancrofti* was not found in the midnight blood; *Loa loa* and *Acanthocheilonema perstans* were present in comparable numbers in those with and without lymphadenopathy. The possible aetiological role of *Onchocerca volvulus* was suggested by the occurrence of a high proportion of long-standing onchocercal infestation associated with more than minimal degrees of lymphadenopathy. Significantly greater numbers of adult males suffering from slight grades of scrotal elephantiasis and orchitis had coincident onchocerciasis and inguinal lymphadenopathy.

D.L.H.R.A.

(177j) The miracid compound 27T51, which had been found to be active without side effects against *Schistosoma mansoni* infections in baboons, was tested on one uninfected European and two Africans infected with *S. haematobium*. A single dose of 12.5 mg. per kg. body-weight quickly produced a good blood level (3 µg. per ml.), but there was a severe side effect amounting to nerve deafness appearing two hours after administration of the drug and lasting for up to four days. Other mild side effects were constipation and light-headedness. It was therefore considered impracticable to test the effect of repeated doses. In the two infected Africans, the single dose had no effect on the number of eggs hatching in the urine and no dead eggs were seen. It was concluded that the compound is unsuitable for treating human schistosomiasis and that baboons are unsuitable animals on which to test the toxicity of drugs likely to be used in human treatment.

D.L.H.R.A.

(177k) Snails known to be intermediate hosts of schistosomes were recovered from a dam temporarily polluted by sewage. In the dry season 21.3% of *Biomphalaria pfeifferi* and 0.96% of *Physopsis* sp. from the polluted locality were infected, as against 1.27% and 0% respectively from other sites. Laboratory animals infected with the cercariae from *Biomphalaria* were shown by de Meillon to be passing eggs of *Schistosoma mansoni*. Since *S. mansoni* is not known to be rife in the area the implications of such a high percentage of infected snails is discussed. Bayer suggests that the remarkable rarity of *S. haematobium* in the *Physopsis* sp. in this area, where urinary bilharziasis is known, is probably due to hatching of the eggs in the sewer with subsequent destruction of the miracidia in the turbulent waters.

D.L.H.R.A.

(177l) Details are given of a trial made with Triostam (trivalent sodium antimony gluconate) on 40 African patients infected with *Schistosoma haematobium*. Total dosage spread over six daily injections was 20 mg. per kg. body-weight. The main toxic symptom encountered was feverishness but a few complained of nausea and vomiting. Three weeks after treatment ova could be demonstrated in only one patient. Of 34 who were subsequently examined 15 were positive, 9 of which were examined between 15 and 20 weeks after administration of the drug; reinfection may have occurred among these. In view of his experience with sodium antimony tartrate, anthiomaline and nilodin, Messent suggests that Triostam might be the preparation of choice in Europeans suffering from schistosomiasis.

D.L.H.R.A.

178—Ugeskrift for Laeger.

- a. NORN, M. S., 1954.—“Påvisning af oxyur-aeg. En sammenligning mellem Hall's, Markey's og Graham's metoder samt en modifikation af sidstnævnte (klaebecellofan-immersionsolie-metoden).” 116 (3), 77-82. [English summary p. 82.]
- b. NORN, M. S., 1954.—“*Trichocephalus dispar* piskeormen. Rundorme II.” 116 (3), 82-87. [English summary p. 87.]
- c. NORN, M. S., 1954.—“Klaebecellofan-immersionsolie-metoden til påvisning af oxyur-aeg. Rundorme III.” 116 (3), 87-89. [English summary p. 89.]
- d. NORN, M. S., 1954.—“Oxyurernes frekvens og symptomatologi. Rundorme IV.” 116 (3), 89-92. [English summary p. 91.]

(178a) A modification of the adhesive cellophane swab method for detecting *Enterobius vermicularis* ova is described and illustrated. The cellophane swab after use is spread out on a microscopical slide on which a drop of immersion oil has been put previously and is then examined with a low power. It is claimed that the results are more exact than those obtained by the three methods devised by Hall, Markey and Graham. R.T.L.

(178b) *Trichuris* ova were detected in 21.4% of 252 patients selected at random in Denmark. The infection was commonest in women from rural areas. Serious cases were extremely rare but pruritus ani was present in 23% as compared with 8% in a control group. R.T.L.

(178c) Although a single swabbing may reveal *Enterobius* ova in 58% using the adhesive cellophane immersion oil technique, four to five swabbings are necessary to establish a negative diagnosis. R.T.L.

(178d) Only a few cases of *Enterobius* infection among 609 individuals chosen at random showed pruritus ani or perianal irritation and none showed dyspeptic symptoms or anaemia. R.T.L.

179—Ugeskrift for Landmaend.

- a. ANDERSEN, S., 1954.—“Resistens mod havreaal.” 99 (4), 43-45.

(179a) A preliminary report is given on experiments in 1952 and 1953 to study resistance against the oat nematode (*Heterodera major*) in oats and barley. Cysts on the roots of the plants have been counted and also the number of larvae in the soil in the autumn when different varieties have been grown. A comparison is made between the two methods. The first method (cysts) does not require as much labour and land as the second (larvae). Differences in resistance have been found between barley varieties as well as between oat varieties. S.B.

180—United States Armed Forces Medical Journal.

- a. BURROWS, R. B., 1954.—“Intestinal parasitic infections in military food handlers.” 5 (1), 77-82.

181—Vestnik Oftalmologii.

- a. KOROEV, A. I., 1954.—[*Filaria* under the skin of the eyelid.] 33 (1), 43. [In Russian.]

182—Veterinaria. Sarajevo.

- a. POPOVIĆ, M. & VUKOVIĆ, V., 1954.—“*Cysticercos* goveda zaklanih na sarajevskoj klaonici.” 3 (1), 143-146. [English summary p. 143.]

(182a) Of 4,563 cattle examined at the Sarajevo abattoir, 88 were found to be infected with *Cysticercus bovis*; 3,583 had come from Bosnia and Herzegovina and of these 87 were found infected. The organs most frequently affected were the heart (75.5%), masseters (52.8%) and gracilis muscles (47.1%). R.T.L.

183—Veterinariya.

- a. CHERKAS, I. A., 1954.—[Diagnosis of the pork tapeworm during life.] 31 (2), 57. [In Russian.]
- b. KORYAZHNOV, V. P. & PESHCHEROVA, O. I., 1954.—[Yamshchikov's method of inspecting *Trichinella* infected meat.] 31 (3), 64. [In Russian.]

(183a) When examining pigs before slaughter, Cherkas observed one to three cysticerci on the surface of the mucous membrane of the upper and lower eyelids. At post-mortem examination five to twenty and more cysticerci were found in 40 sq. cm. of the muscle tissue. He recommends such examination for cysticerciasis in live pigs in order to expedite prophylactic measures. C.R.

(183b) A comparison of the usual method of trichinoscopy with that described by Yamshchikov in *Veterinariya*, 1953, 30, 56–57, has shown that although the latter method takes more time it gives greater accuracy. C.R.

184—Veterinary Extension Quarterly. University of Pennsylvania Bulletin.

- a. DURBIN, C. G., 1954.—“Emetine hydrochloride for the treatment of sheep and goats infested with protostrongylid lungworms.” No. 133, pp. 49–52.

(184a) Emetine hydrochloride was used with some effect in the treatment of eight goats infected with *Muellerius capillaris* and 27 sheep infected with *M. capillaris* and *Protostrongylus rufescens*. As the drug is toxic, it must be given intramuscularly. Durbin infers that its action is due to the high concentration it attains in the lungs and other tissues and suggests that it may also be effective against lung flukes. G.I.P.

185—Veterinary Medicine.

- a. MILLS, A. M., 1954.—“Stomach parasites of cattle.” 49 (6), 226–228.
- b. BURCH, G. R., 1954.—“A new oral anthelmintic for canine whipworms.” 49 (7), 291–293.
- c. FOSTER, A. O., 1954.—“Veterinary parasitology.” 49 (7), 303, 307.
- d. ROUNTREE, J. L., WITTER, J. F. & CHUTE, H. L., 1954.—“Acute lungworm infestation (cattle): a case report.” 49 (7), 306–307.

(185a) Mills stresses the need in south Georgia to educate farmers in an understanding of the ravages of intestinal parasitism and on the difficulty of successful control when treatment is started only after the appearance of symptoms. R.T.L.

(185b) The results of treating 160 dogs with tablets of 3-methyl-1-pentyn-3-yl sodium phthalate confirm that it is a convenient, safe and effective anthelmintic for *Trichuris* infections. Preliminary fasting is not necessary. Treatment resulted in 90% of the dogs becoming negative. The recommended dose of 250 mg. per kg. body-weight gave no toxic symptoms, except in a few instances when it produced vomiting. Whipworm disease is considered to be an allergic syndrome characterized by persistent diarrhoea, dermatitis, nervousness and unthriftiness. A high percentage of dogs in the Great Lakes region harbour the parasite. R.T.L.

(185c) Swine helminthiasis is considered to be a particularly challenging field for the development of new and improved anthelmintics and other chemical control measures as no medications can yet be recommended against 11 out of the 18 comparatively important species. The annual loss in swine in the U.S.A. has been estimated at more than two hundred million dollars. R.T.L.

(185d) An explosive outbreak of acute lung infection with *Dictyocaulus viviparus* occurred in adults and yearlings in a large dairy herd in Maine, U.S.A. and resulted in heavy losses. Symptoms appeared in the first adult cases after only two weeks cohabitation with infected heifers although the prepatent period for *D. viviparus* is at least three weeks, but the infection may have been acquired from pasture contamination by white-tailed deer. R.T.L.

186—Veterinary Record.

- a. MICHEL, J. F., 1954.—"A contribution to the aetiology of fog fever." 66 (27), 381-384.
- b. MICHEL, J. F., 1954.—"Pulmonary oedema in sheep caused by immature lungworms." 66 (32), 460.
- c. SMYTHE, R. H., 1954.—"A contribution to the aetiology of fog fever." [Correspondence.] 66 (33), 477-478.
- d. LEIPER, J. W. G., 1954.—"The piperazine compound V.19 for the removal of *Ascaris* and *Oesophagostomum* from the pig." 66 (40), 596-599.

(186a) Michel has shown that the fog fever syndrome can be induced experimentally in calves by the administration of *Dictyocaulus viviparus* larvae. Sixty-four Jersey bull calves were used, only ten of which were over 100 days old when first infected. Of these ten, seven developed the syndrome between 21 and 26 days after infection and died within a few days. Of the 54 younger calves none developed the syndrome rapidly. In ten which survived more than two months, the worms were eliminated from 116 to 193 days after infection and the syndrome developed at almost the same time. Of seventeen calves which were reinfected after self-cure had taken place, eight showed a characteristic syndrome 10 days to 13 days after reinfection. Post-mortem examinations of lungs sent from cases of fog fever revealed lungworms in 15 out of 20, and three of the negative lungs were putrid. There appears from the experimental work to be some connection between the fog fever syndrome and the self-cure mechanism. The author concludes that lungworm infection is an important factor in the aetiology of many cases diagnosed as fog fever. S.W.

(186b) About 10% of the animals experimentally infected with *Dictyocaulus filaria* died between 21 and 35 days after developing a variable degree of pulmonary oedema. Recently, Dr. Sellers of Leeds saw an outbreak in which six out of 200 lambs showing no symptoms died suddenly with oedematous lungs while the remainder showed symptoms of husk later. These observations suggest that sudden death from verminous pulmonary oedema may be relatively common in lambs and may be a prelude to the outbreak of parasitic bronchitis. R.T.L.

(186c) Commenting on recent articles on fog fever, Smythe points out that whereas in these experiments the animals received one initial dose of larvae followed by a second and much larger dose at a later date, in cases met with in general practice calves and adults at pasture daily consume doses of larvae, which may be large or small, and may do so continuously or intermittently over long periods. Whereas the lungs of the experimental animals contained few or no lungworms, in hoose pneumonia encountered in practice the numbers are very large. Self-cure may manifest itself in calves affected with hoose when they are housed at the first outbreak of coughing (as in the calves experimentally infected with a single dose of larvae) but when turned out again on to fresh pastures which have been grazed by adult cattle they may suddenly show acute symptoms suggestive of worm sensitization. Smythe points out that cattle sometimes become sensitized to substances other than *Dictyocaulus* larvae and that during the fog fever season grazing animals freely inhale pollen and that they may have to be housed during this period. The belief that sun-dried hay does not carry viable larvae may need to be revised as outbreaks of parasitic bronchitis have been observed in housed calves on three separate farms. R.T.L.

(186d) A new anthelmintic V.19 (polymeric piperazine-1-carbodithioic acid) is a stable, tasteless, wettable powder which is readily decomposed by acid, e.g. gastric juice, liberating piperazine and carbon disulphide. It is insoluble in water, is not deliquescent and is neither acid nor alkaline in reaction. V.19 is not toxic to pigs and can be given in wet or dry food at the rate of 75 mg. to 150 mg. per kg. live-weight. Critical tests demonstrated that 100% of *Ascaris* and 86% of *Oesophagostomum* were removed by a dose of 100 mg. per kg. Under farm conditions the dose recommended is 125 mg. per kg. This reduced the *Ascaris* egg count by 96%. Thirty-eight pigs so treated passed 198 *Ascaris* and 6,018 *oesophagostomes*. The worms were alive and active. Some were eaten when voided. The new drug can be given to pigs over five weeks old and to in-pig sows. As it is effective against immature as well as adult forms it can be advantageously administered to suckling pigs before weaning. R.T.L.

187—Wiener Tierärztliche Monatsschrift.

- a. BÖHM, L. K. & SUPPERER, R., 1954.—“Weitere Untersuchungen über Mikrofilarien als Erreger der periodischen Augenentzündung der Pferde.” 41 (3), 129–139. [English, French & Italian summaries p. 139.]
- b. SUPPERER, R., 1954.—“Versuche über die Entwicklung des Geflügel-Bandwurmes *Hymenolepis cantaniana* (Polonio 1860).” 41 (4), 199–203. [English, French & Italian summaries pp. 202–203.]
- c. MAYER-JONES, L., 1954.—“Einige Antiparasitica interna und ihre praktische Anwendung in den USA.” 41 (6), 321–327.

(187a) Microfilariae of *Onchocerca cervicalis* were present in large numbers in the cornea of 78 out of 102 horses with periodic ophthalmia. Acute attacks were accompanied by exudative iritis, cyclitis and chorioiditis in addition to the changes in the cornea and sclera. Microfilaria were also found in the uvea. The eyes of 9 out of 75 horses without ophthalmia showed microfilariae in small numbers. R.T.L.

(187b) Supperer has found that in Austria 90% of the dung beetles, *Onthophagus ovatus* and *O. ruficapillus*, are naturally infected with the cysticercoid of *Hymenolepis cantaniana* of poultry. The cysticercoid, which is described and figured, lives in the body-cavity. This is the first time that vectors of *H. cantaniana* have been recorded for Europe, although in the U.S.A. three species of dung beetles have been shown to be intermediaries. As fresh cow dung is more attractive to dung beetles than poultry droppings, it can be used as a simple means of control. R.T.L.

(187c) The anthelmintic uses and effects of sodium fluoride, arecoline hydrobromide and N-butylchloride are briefly summarized. R.T.L.

188—Yokohama Medical Bulletin.

- a. NAKAJIMA, M., 1954.—“Biochemical studies on the nature of ascaristoxin.” 5 (1), 10–20.

(188a) Nakajima prepared a crude ascaris toxin from pig ascaris fluid by freeze drying. The M.L.D. to guinea-pigs of this substance was 30 mg. per kg. body-weight. He purified it by various physical and chemical techniques and concludes that it is mainly protein. S.W.

189—Zeitschrift für Morphologie und Ökologie der Tiere.

- a. BRUNOLD, E., 1954.—“Zur Morphologie, Biologie und bakterienfreien Züchtung des Nematoden *Panagrellus zymosiphilus* Brunold 1950.” 42 (4), 373–420.
- b. MEYL, A. H., 1954.—“Beiträge zur Kenntnis der Nematodenfauna vulkanisch erhitzter Biotope. III. Mitteilung. Nematoden aus der Mischungszone strandnaher, heisser Süßwasserquellen mit dem Meerwasser auf der Insel Ischia.” 42 (5), 421–448.

(189a) In a preliminary communication published in 1950 in *Vjschr. naturf. Ges. Zurich*, 95, 148, Brunold described as *Anguillula zymosiphila* a new nematode found in maize fodder. After further systematic study she now places the species in *Panagrellus* as *P. zymosiphilus*. A detailed and fully illustrated description is presented together with an account of its bionomics. Attempts to grow the worm in pure culture in various media were unsuccessful, but bacteria-free mixed culture could be obtained with the yeast *Saccharomyces cerevisiae*. A.E.F.

(189b) In this third and final part of his study of the nematodes of the volcanic island of Ischia, Meyl deals with specimens obtained from areas where fresh water from springs mingles with sea water. Of the twenty-six species described the following are new: *Microaimus honestoides* n.sp., *M. pygmaeus* n.sp., *Rhabdolaimus brachyuris* n.sp., *Monhystera gerlachii* n.sp. and *M. cartaromanae* n.sp. *Croconema (Aculeonchus)* sp., near to *C. sphaericus*, is also described. Only six of the species found are considered to be typical of this particular biotope. Owing to continual variations the temperature and salt content of the waters could not be determined. A.E.F.

90—Zeitschrift für Parasitenkunde.

- a. FRENZEN, K., 1954.—“Biologische Untersuchungen an *Ascaridia galli* Schrank 1788.” 16 (3), 214–240.
- b. REICHENBACH-KLINKE, H., 1954.—“Rückgratverkrümmung bei Fischen nach Acanthocephalen (Kratzer)-Befall.” 16 (3), 253–254.

(190a) Frenzen's experiments show that *Ascaridia galli* ova are killed at 60°C. in 5 minutes, at 70°C. in 20 and at 90°C. in 4 minutes. In a wet medium, over five minutes at 5°C. inhibited development and at 80°C. all eggs were killed within two minutes. Ova were extremely resistant to alcohol and even a 96% solution took 35 hours to kill all eggs. The embryonal development of *A. galli* ova is described in detail and figured. After artificial digestion of ova in pepsin and trypsin, the embryos will invariably hatch in distilled water. Attempts to infect domestic fowls by intravenous injection of living embryos failed. Frenzen reports the finding of a 63 cm. long adult *A. galli* in a hen's egg. A.E.F.

(190b) Hundreds of rainbow trout, *Salmo irideus*, died at a breeding ground within a few days and the 30 specimens sent to Reichenbach-Klinke were all found to have curvature of the backbone. Examination of the gut revealed in every case infection with *Proteocephalus angicollis* (average 6 specimens with a maximum of 14) and *Echinorhynchus truttae* (average 8, maximum 17). The author concludes that the acanthocephalans must be looked upon as the primary cause of the deformity. A.E.F.

91—Zeitschrift für Tropenmedizin und Parasitologie.

- a. TEICHLER, G. H. J., 1954.—“Bemerkungen zur Rinde von *Albizzia anthelmintica* als Bandwurmmittel.” 5 (1), 131–133. [English summary p. 133.]

(191a) The bark of *Albizzia anthelmintica*, a native worm cure in various parts of Africa, was used successfully in 22 cases of tapeworm. All the cases had previously been unsuccessfully treated with other anthelmintics. The author gave four ounces of the dry powder to each but suggests that a smaller dose may be sufficient. The powder should be taken in one or two teaspoonfuls with cold water before all drink and food. The tapeworm is discharged in three to four days but may be wholly or partially dissolved. Even in weak persons and a five-year-old boy who had been given full dosage, there were no ill effects. The bark was found ineffective against enterobiasis. G.I.P.

92—Zeitschrift für Vergleichende Physiologie.

- a. KREUZER, L., 1954.—“Zur Kenntnis der physikalisch-chemischen Eigenschaften der Eihülle von *Ascaris lumbricoides*. II. Mitteilung.” 36 (1), 21–26.

(192a) Kreuzer exposed single-celled eggs of *Ascaris lumbricoides* to 1:10,000 “Acridine orange” in phosphate buffers and examined distribution and condition of the pigment in the egg membranes microscopically. A strong electro-absorptive capacity was shown by the outer and upper albuminoid membranes; the inner layer showed selective lipid solubility. The author attributes the resistance of the eggs of *Ascaris* to a combination of the physico-chemical properties of the membranes. W.P.R.

93—Zentralblatt für Bakteriologie. Abteilung 1. Originale.

- a. BADER, R. E. & PFEILSTÜCKER, I., 1954.—“Ein Beitrag zur geographischen Verbreitung von *Muspicia borreli* Sambon.” 161 (1), 80–84.

(193a) Several specimens of *Muspicia borreli* were found in a white mouse obtained from a breeder in Hamburg. The worms were enclosed in gelatinous oedematous tissue. This condition has not been reported previously but it remains to be decided if the oedema was due to the presence of this parasite or had arisen independently. R.T.L.

194—Zoologische Jahrbücher. Abteilung für Allgemeine Zoologie und Physiologie der Tiere.

- a. KAISER, F., 1954.—“Beiträge zur Bewegungsphysiologie der Hirudineen.” 65 (1), 59–90.

(1942) Kaiser reviews earlier work on the physiology of movement in *Hirudo medicinalis*, *Haemopsis sanguisuga* and *Erpobdella octoculata* and describes his own experiments. He first deals with the physiology of the nervous system in relation to movement: he concludes that all movement depends on the ventral nerve cord and that all three species behave identically. Kaiser then deals with movement induced by external stimuli. His researches show that *Hirudo medicinalis* is attracted by human sweat (although it is also able to feed on amphibians) and reacts to temperature changes of as little as 1.5°C .: it prefers a temperature of 21°C . All three species show reactions to light and shadow. A.E.F.

195—Zoologische Jahrbücher. Abteilung für Anatomie und Ontogenie der Tiere.

- a. FRENZEN, K., 1954.—“Untersuchungen zur Morphologie und mikroskopischen Anatomie von *Ascaridia galli* Schrank 1788.” 73 (3), 395–424.

(1952) Frenzen presents a detailed report of his studies on the post-embryonal development and histology of *Ascaridia galli*. During development the proportions of the various parts of the worm vary markedly: the greatest increase in length occurs in the middle section of the body. Differences in body proportion between males and females also occur. The buccal cavity is surrounded by three lips each having two papillae. The cuticle has six layers and the egg-shell has four. A pair of unicellular glands appears on either side of the vulva. The oesophagus and its glands are described in detail. Specimens of *A. galli* from Indonesia, which differed from German ones in body proportions and in the shape of the spicules, and also showed histological variations, were none the less held to be of the same species. The paper includes 63 literature references. A.E.F.

NON-PERIODICAL LITERATURE

- 196—LING, L., 1954.—“Digest of plant quarantine regulations. Supplement I.” Rome: Food and Agriculture Organization of the United Nations, 100 pp.
- 197—MOZLEY, A., 1954.—“An introduction to molluscan ecology. Distribution and population studies of fresh-water molluscs.” London: H. K. Lewis & Co. Ltd., x+71 pp.